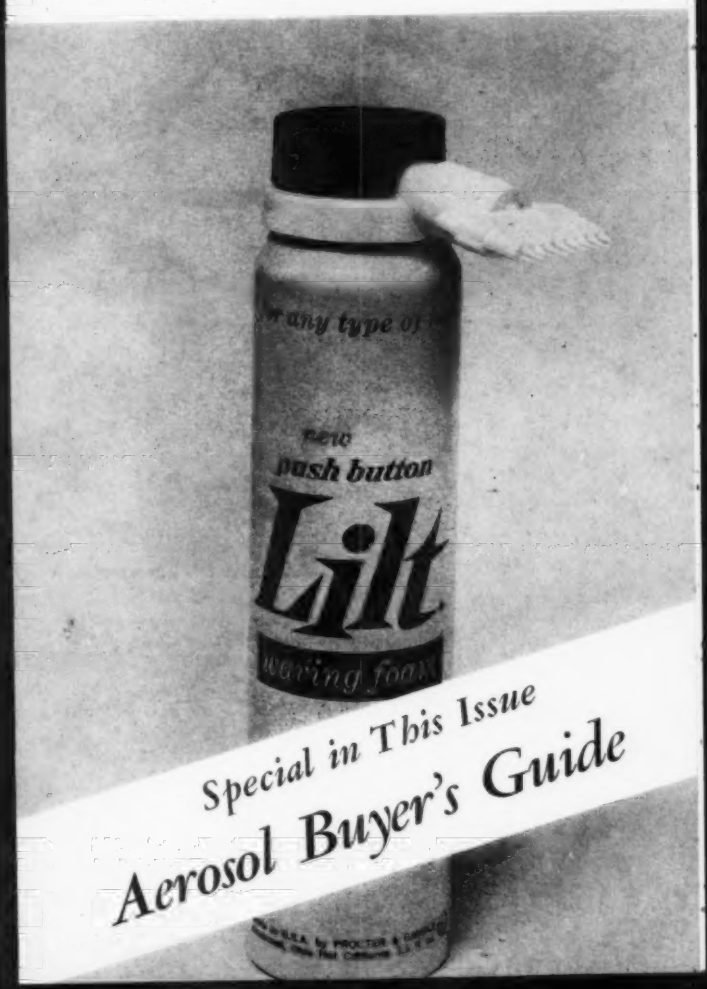
Pharm.

AEROSOL AGE

THE MAGAZINE OF PRESSURE PACKAGING



Special in This Issue

Aerosol Buyer's Guide

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As the nation's largest aerosol loader and custom filler of conventional packages, Stalfort offers a high-speed liquid fill line, with a rated capacity of 15,000 glass or high-density polyethylene bottles per hour. A complete line of household chemicals—waxes, cleaners, polishes, detergents — for private label packaging is also available.

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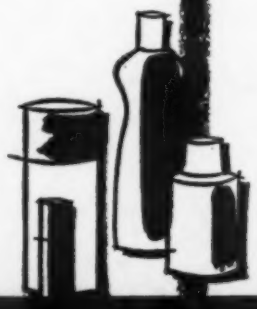
SPECIALISTS IN THE FILLING OF ALL TYPES OF CONTAINERS WITH ALL TYPES OF



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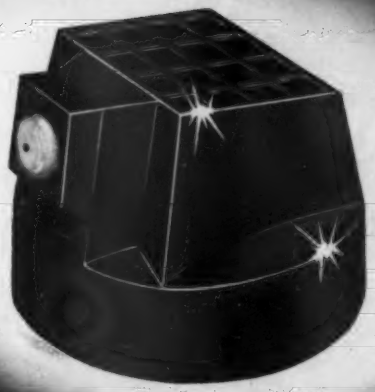
the new JET HEAD

by Aerosol Research



. . . for paint and related products!

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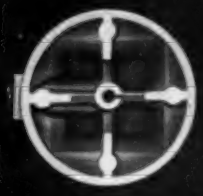

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New self centering design guarantees it. Speeds assembly, saves time and that means money.

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The metering is built right into the spray head . . . cleans easy for trouble free service.

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Jet Head is designed for the prolonged use of spray paints and related items!

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You just can't miss with Jet Heads built-in accuracy . . . it's designed for everyones convenience.

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CUSTOM DESIGN SERVICE!
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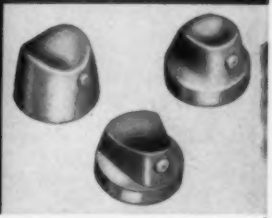

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- ☐ Complete data on Jet Head.
- ☐ Have a representative bring samples at no obligation to me.
- ☐ Details on ARC's custom design service!

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Schimmel & Co., Inc.

NEWBURGH, NEW YORK

THIS MONTH'S COVER

A new aluminum container is being used to test market "Push Button Lilt," Procter & Gamble's aerosol home permanent which hitherto has been nationally marketed in a coated glass version. Further details on how the can is fabricated and then decorated by Peerless Tube Co., the supplier, appear in the cover story beginning on page 73.

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AEROSOL AGE

The magazine of pressure packaging

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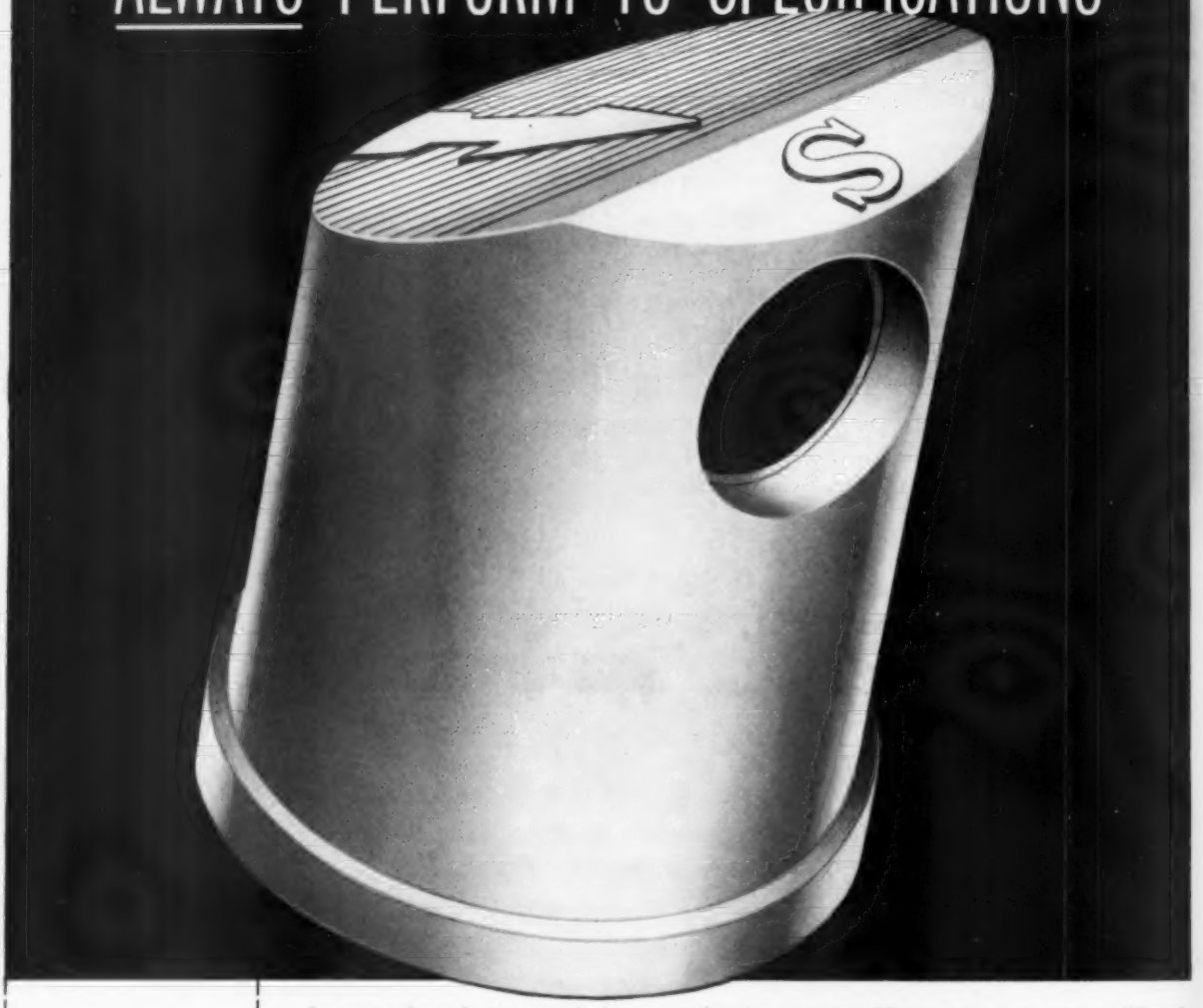

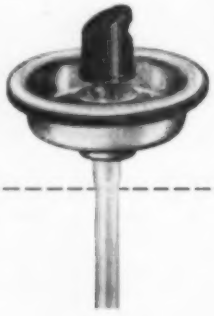

An aerosol product can only be as good as its actuator. You can be *sure* your millionth actuator will create the identical spray pattern as the first . . . with Schrader. *Fact:* This Schrader mechanical break-up actuator is 100% tested during production, and in addition spot-checked at 150°F. to 150 lbs. psi. *Fact:* Behind it are Schrader's unmatched engineering and research facilities, plus unique production techniques. *Fact:* This milestone achievement in aerosol engineering dispenses a product-tailored pattern . . . and always in the right direction.

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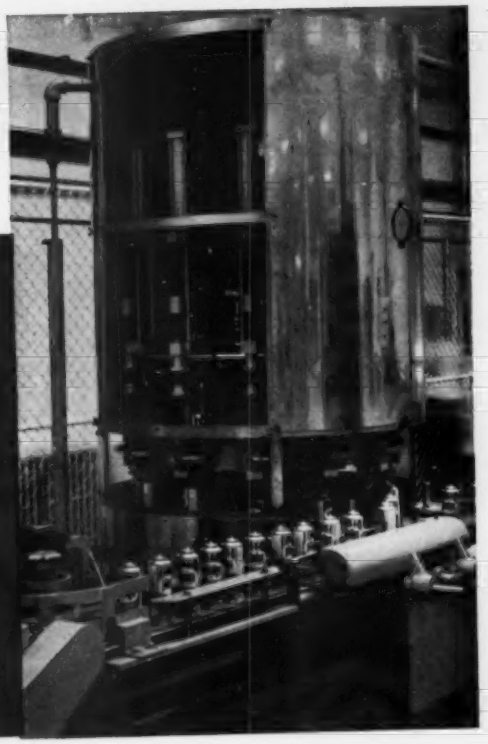
KARL KIEFER
goes to London . .



KIEFER
"Gas/Jet"

AEROSOL CHARGER and VARI-VISCO FILLER

If you will read the accompanying AEROSOL PACKAGING COMPANY letter, you will quickly learn why KARL KIEFER is consumed with such pride and joy over the accomplishment. GOOD news travels FAR and FAST. When a BRITISHER is bubbling over surely he is genuinely enthusiastic. Shown—three KARL KIEFER Products (1) Measuring Filler—(2) an Air Purger — and (3) an Aerosol Precise Charger.

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A/MNC/DEC

15th August, 1961.

Karl Kiefer Machine Co.,
Cincinnati 2,
Ohio,
U.S.A.

Gentlemen:

In your last letter you did say that you felt my enthusiasm contagious and would like to pass it on and use statements I had made in my letter. I looked back at my letter of the 31st July and quite honestly I did not see what you could use. However, if you want something, here goes, and it is said with sincerity:

"The decision taken by us to purchase your filling equipment last year, we feel, has been fully justified and is going to be fully justified in the future. It is a beautiful piece of machinery, superbly manufactured. However good a piece of machinery is, though, it has to be backed up by service and meticulous attention to queries which obviously crop up when we are this side of the Atlantic. I would like to say how grateful we are for your attention and service during the installation period. We are extremely happy that we chose your equipment."

Kind regards,

Yours sincerely,

Michael Crowder

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Established 1890

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- A-16 Aerosol Coating Compositions
- A-48 The Formulation of Aerosol Alkyd Enamels
- B-18F U. S. Patents of Interest in Connection with Aerosol Food Products
- FA-13 The Formulation of Aerosol Coating Compositions with "Freon" Fluorinated Hydrocarbon Propellents
- FA-17A Aerosol Powders
- FA-18 Propellents for Low-Pressure Cosmetic Aerosols
- KTM-20 Aerosol Antitarnish Formulation

ANALYTICAL
- A-11 The Analysis of Moisture in Aerosol Formulations
- B-8 Quality Specifications and Methods of Analysis for the "Freon" Fluorinated Hydrocarbon Refrigerants
- B-21 Procedure for Sampling "Freon-12" and "Freon-22" from Tank Cars
- B-23 Moisture Determination in "Freon" Fluorinated Hydrocarbon by Karl Fischer Titration
- B-25 New Instrument for the Moisture Analysis of "Freon" Fluorinated Hydrocarbons
- B-27 Operation and Maintenance of Model W Electrolytic Moisture Analyzer
- B-28 Quantitative Determination of Fluorinated Hydrocarbons by Gas Chromatography
- B-37 A Guide to Methods of Analysis of "Freon" Refrigerants
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FREON® propellents

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FA-17A	B-27	A-19	FA-24	A-54	B-30	B-11C	FA-3	A-13168
								A-15380

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An economical and efficient valve that can be modified to various spray rates. Available with a variety of plastic, metal and custom-made, mechanical and non-mechanical break-up actuators. Ferrules are furnished in plain, aluminum or gold anodized finish.

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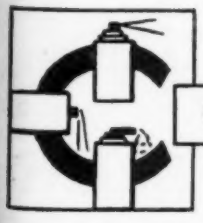

CONTINENTAL FILLING CORPORATION

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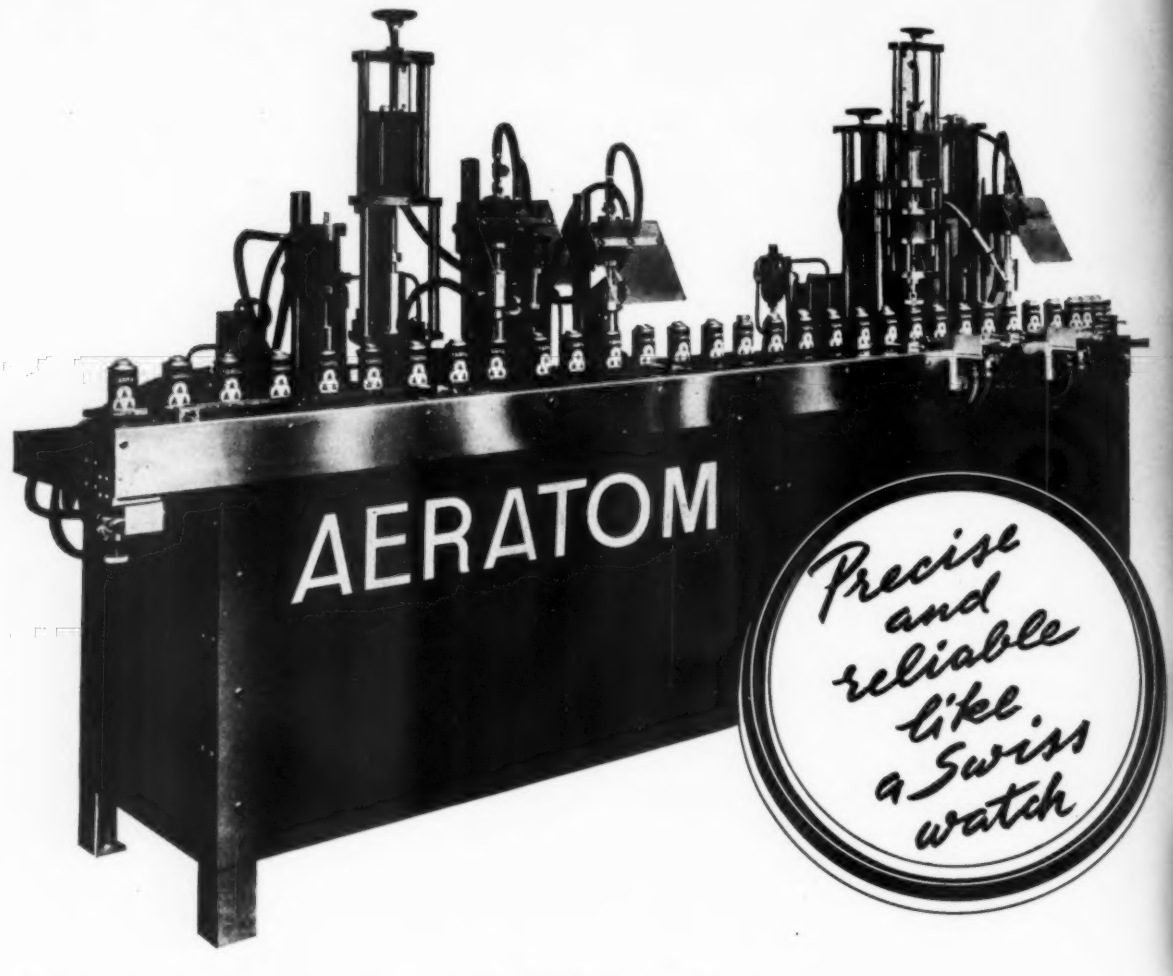
PLANTS IN: DANVILLE, ILL. HOBART, IND.



Automatic aerosol filling lines

Swiss-made AERATOM filling lines represent the ultimate in precision, quality, durability and efficiency.
AERATOM is the oldest European manufacturer of aerosol equipment and one of the few leading firms in this branch.
AERATOM equipment is the product of long years' research and experience. Our firm has supplied many hundreds of aerosol producers throughout the world with aerosol equipment, and we place our experience at your disposal.
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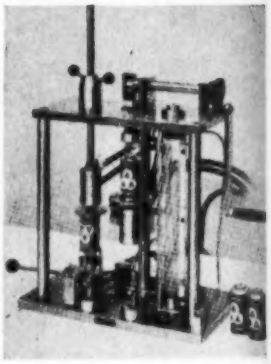
Favorable prices in spite of highest Swiss quality.



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add specific new functional properties to lanolin's most active components

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SOLULANS®—*ethoxylated derivatives.* Water soluble, yet emollient! Solubilizers of great general utility. Impart excellent plasticizing, lubricating, and conditioning qualities at low concentrations.

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POLYLAN®—*essential polyunsaturate.* Liquid *wax ester.* Combines the natural benefits of linoleic acid with the softening, protective, and conditioning properties of lanolin's most active components.

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IMPACT... new high and low pressure, all-aluminum seamless aerosol containers in all sizes 3 to 45 ounces... lined or unlined, plain, painted or lithographed. It will PAY YOU to re-evaluate your packaging approach NOW.

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She'll buy the one with the Fastest Knockdown every time

Flatten flyers, kill crawlers and spark sales . . . faster, by basing your aerosol insecticide formulations on LETHANE® 384. The faster insects are knocked down—the faster sales go up. And when you put LETHANE speed in your aerosol, you also build in an important economy factor. You can save up to 3¢ a can! Besides high killing power, you are assured of safety, stability, satisfactory odor and compatibility with insecticide aerosol ingredients. Make your own test. Prove to yourself that you can reduce costs and increase the effectiveness of your aerosols. Write today for test samples, technical data and formulating assistance.

ROHM & HAAS
PHILADELPHIA 5, PA.

LETHANE 384

It's all in a spray's work

Aerosol products perform better, satisfy longer when formulated with silicones

A woman's day — from household chores to beauty care — is more productive and pleasant because of aerosols with their fast, convenient, no-mess application. To assure such performance and satisfaction, many aerosol packagers now include Dow Corning Silicones in their formulations. Result: boosted brand preference.

Furniture polishes, for example, offer no-rub application. They spread better; give faster film formation. A deeper, richer gloss is more easily attained and maintained. Resistance to oxidation and water spotting is "built-in" with Dow Corning Silicones.

Cosmetic sprays formulated with silicones stay put; won't wash away. The skin is never left greasy; remains free to "breathe"; is effectively protected against water-borne irritants. Hair sprays with silicones impart a softness and luster that lasts; resist the effects of humidity; improve manageability.

Spray-on starch ends the fuss and work of old hard-to-make household starch. Now add a small amount of a Dow Corning silicone emulsion and ironing itself becomes easier because the silicones condition the iron's sole plate. The iron glides smoothly and easily; starch won't burn and stick to the plate.

Everyone benefits — formulator, filler and housewife — when Dow Corning Silicones are used to make aerosol products perform better. For the latest, most complete technical information about silicones in specialties, cosmetics, polishes or industrial products, contact Dow Corning.

For specific formulation data or recommendations, write Dow Corning Corporation, Dept. 0222, Midland, Michigan.

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The Precision "Button On" Gassing Head Attachment!

Permits gassing with the actuator button on.

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to
SMALL LABORATORY EQUIPMENT

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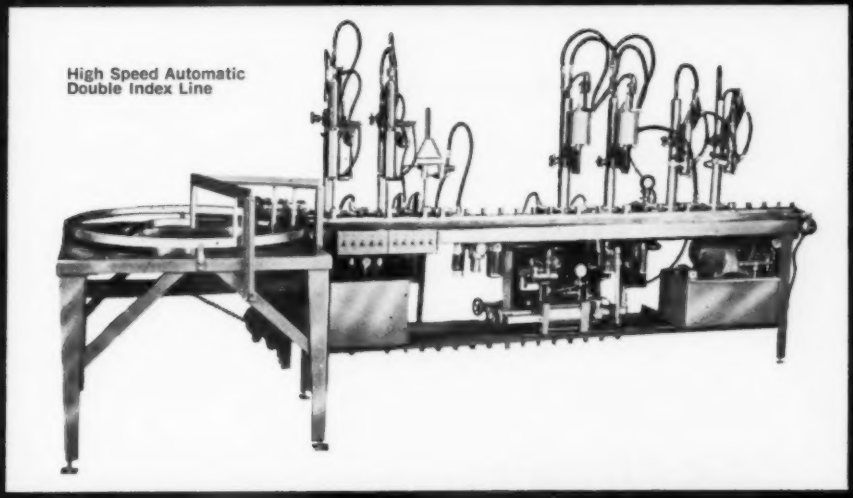

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- ☐ Call me (collect) on ..... for an appointment.
- ☐ Stop in and have a "chat" with me on .....

I understand there is no obligation for any technical advice, detailed information or consultation given me.

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Firm .....
Address .....
City ..... Zone ..... State .....

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AND

ROOM SPRAYS

COMPOUNDS

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POLISHES

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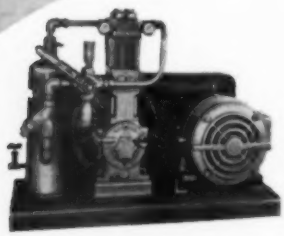

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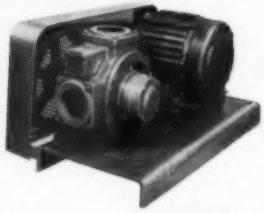
A CORKEN DRY-CYLINDER COMPRESSOR CAN'T CONTAMINATE YOUR PROPELLANT WITH OIL



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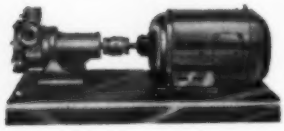

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TANK CARS AND TRANSPORTS ▶ For loading and unloading tank cars and transports, quickly and efficiently with complete recovery of vapor, there's the #290-107 "dry-cylinder" compressor. A tremendous first for Corken's — and you. It **can't** contaminate your product with oil. The crankcase is separate from the compressor-cylinder. Smooth running, and the one piece carbon piston rings assure top efficiency for years to come.

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diffusive
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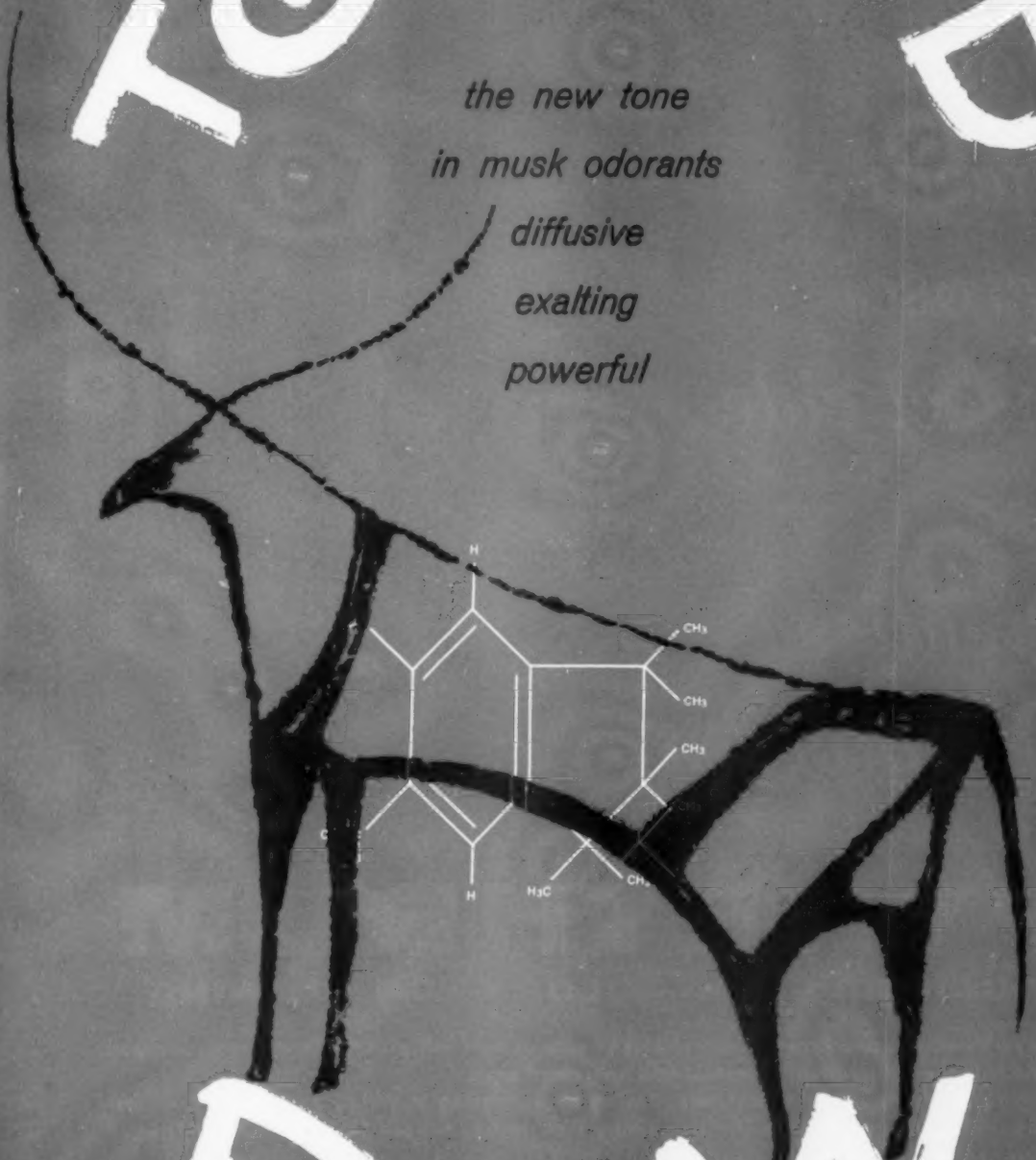

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INDUSTRY MEETING CALENDAR

Federation of European Aerosol Associations, 3rd International Aerosol Congress, Lucerne, Switzerland .....Oct. 3-8

Packaging Institute, 23rd Annual National Packaging Forum, Biltmore Hotel, New York....Oct. 18-20

National Agricultural Chemicals Assn., annual meeting, Homestead, Hot Springs, Va. Oct. 29-Nov. 1

Canadian Manufacturers of Chemical Specialties Association, fourth annual meeting and conference, Royal York Hotel, Toronto, ...Oct. 30-Nov. 1.

Federation of Societies for Paint Technology, annual meeting, Shoreham and Sheraton-Park hotels, Washington, D. C.....Nov. 2-4

Packaging Machinery Manufacturers Institute, Cobo Hall, Detroit, Mich. .....Nov. 7-10

Chemical Industries Exposition, Coliseum, New York Nov. 27-Dec. 1

Society of Cosmetic Chemists, annual meeting, Biltmore Hotel, New York .....Nov. 28

Toilet Goods Association, Meeting of Scientific Section, Waldorf-Astoria, New York, N. Y.....Nov. 29

Chemical Specialties Manufacturers Association, 49th Annual Meeting, Roosevelt Hotel, New York, N. Y. .....Dec. 4-8

Drug, Chemical & Allied Trades Association, Annual Dinner, Waldorf-Astoria, New York, N.Y...Mar. 1, 1962

Chemical Specialties Manufacturers Association, 49th mid-year meeting, The Drake, Chicago ....May 14-16, 1962

Chemical Specialties Manufacturers Association, meeting of board of governors and division executive boards, Penn-Sheraton Hotel, Pittsburgh, Pa.....Mar. 14-15, 1962

Toilet Goods Association, annual convention, Chateau Frontenac, Quebec, Canada....June 24-29, 1962

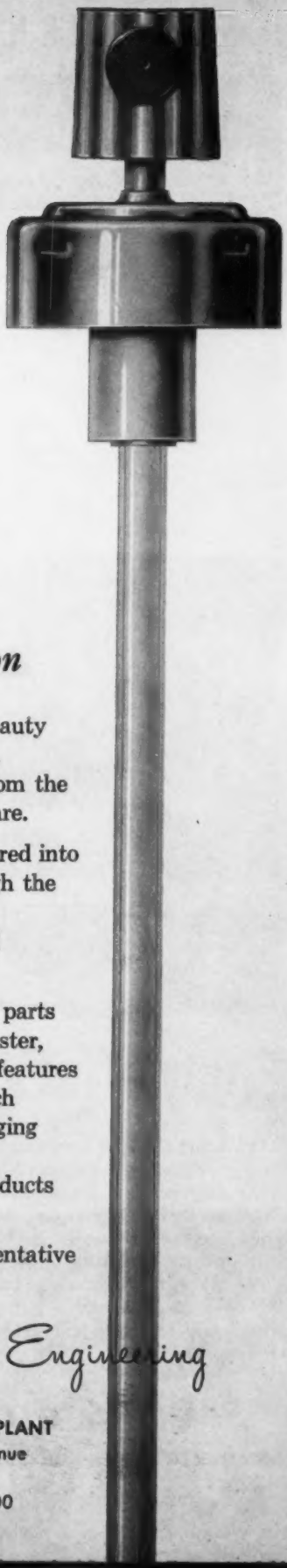
Chemical Specialties Manufacturers Association, 49th annual meeting, The Mayflower Hotel, Washington, D. C.....Dec. 3-5, 1962

- **Aerosol Buyer's Guide-1961-1962** . . . The fifth annual buyer's directory, devoted exclusively to the pressurized packaging field, is the feature of this issue. Alphabetical listings of firms offering services, components, raw materials, and equipment begin on page 35.

- **Industry Views Differ at N. Y. Fire Dept. Hearing** . . . The long-awaited hearing to determine whether or not New York will attempt to enforce a ban on flammable aerosol propellants is concluded with some fireworks, a few statistics, and a sound CSMA presentation. Complete story on page 66.

- **P&G Test Markets "Lilt" in A New Container** . . . Whenever a major marketer test markets a major product there are a whole host of marketing decisions made. **Aerosol Age** tracks down some of these in its cover story beginning on page 73.

- **Polyvinyl Acetate Copolymer for Hair Sprays** . . . With an eye to the current patent hassle over PVP, Paul Weitz of National Starch & Chemical, here presents the aerosol story for his company's hair spray resin. Formulating advice and performance data appear in the article, which begins on page 86.



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in nature is infused
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Quality

is a matter of natural perfection

A perfect stalk of wheat possesses inherent beauty and quality. Man-made products are different. The attributes of beauty and quality result from the application of skill, ingenuity, judgment and care.

At Newman-Green, quality has been manufactured into every aerosol valve carefully, patiently. Through the years, every effort has been made to produce a valve that is as nearly perfect as experienced human capabilities will permit.

Newman-Green embodies the finest component parts obtainable for aerosol valves that pressure fill faster, more uniformly. One of the many outstanding features Newman-Green pioneered is the complete switch of the spray pattern in seconds simply by changing the spray head. This is only one of the many features Newman-Green gives your aerosol products for a competitive edge.

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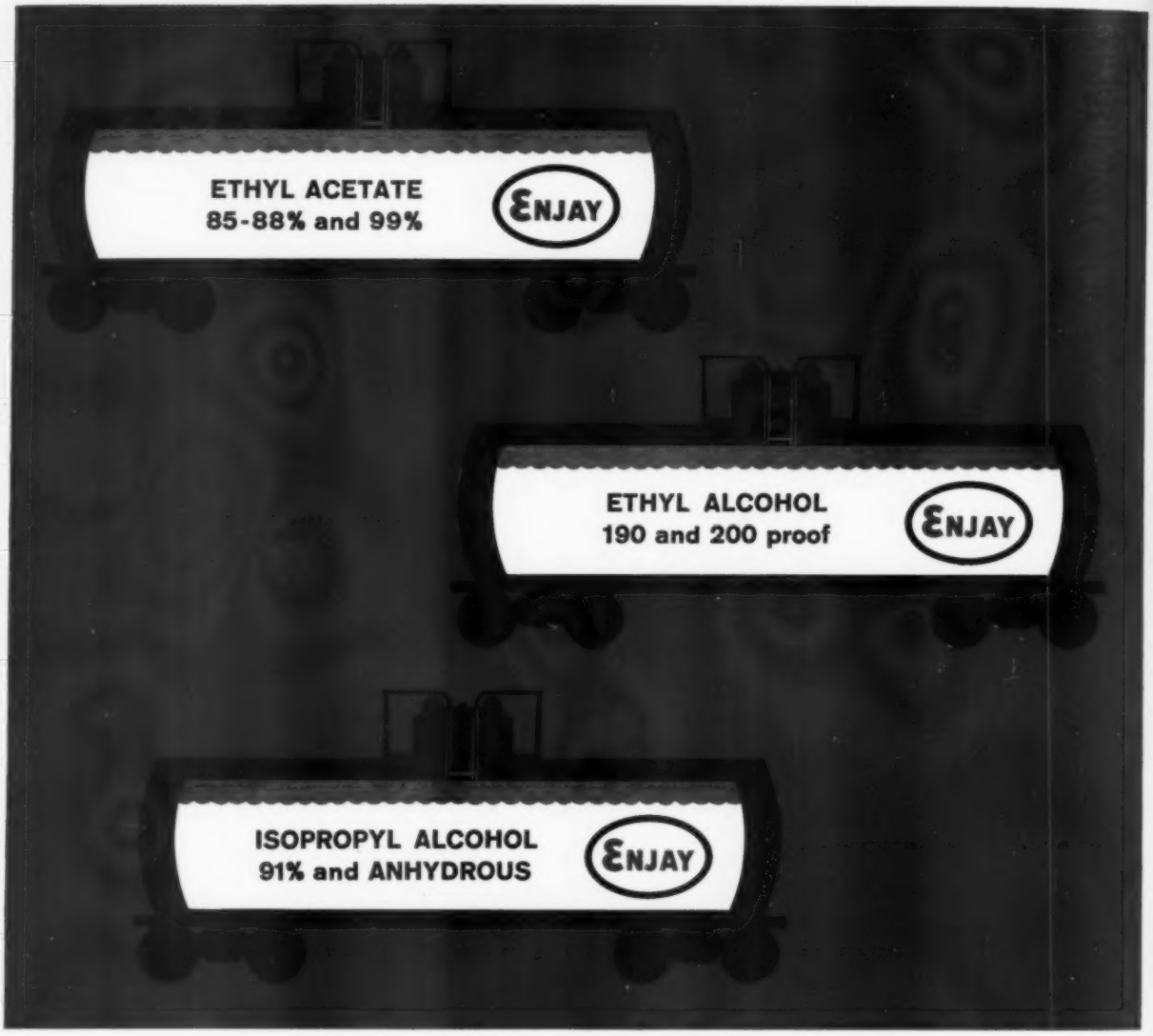

Enjay offers all 3 for the cosmetics industry...

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AVAILABLE IN SEVERAL FORMS AND RATIOS FOR DIVERSIFIED APPLICATION

E-SERIES—50% COPOLYMER SOLUTIONS IN ETHANOL Four different monomer ratios for flexibility in the creation of products such as hair sprays and tints, shampoos, wave-set lotions, protective bandages and masks, and spray gloves. **E-Series Copolymers make quick-breaking foam systems practical.**

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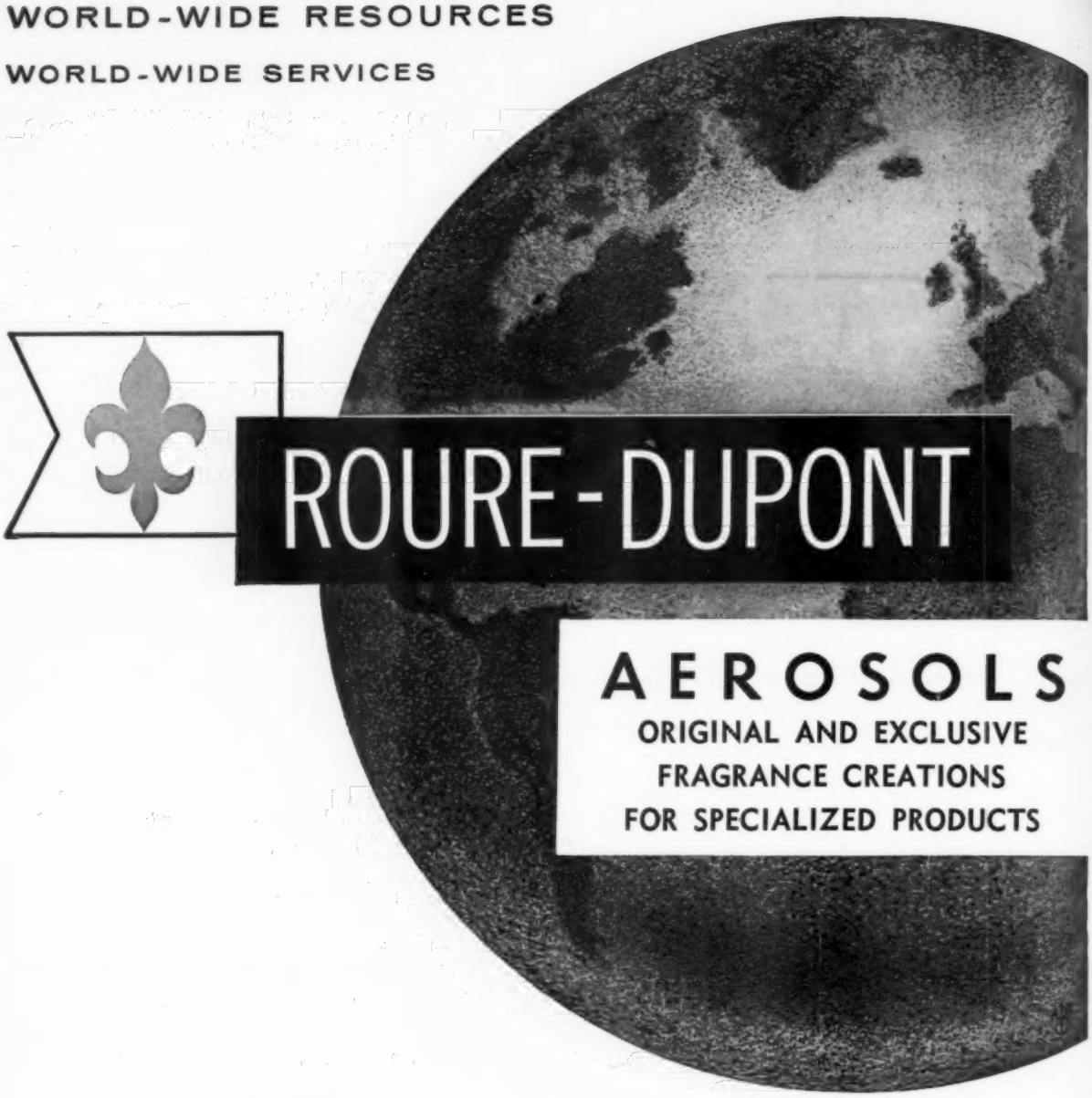

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ORIGINAL AND EXCLUSIVE
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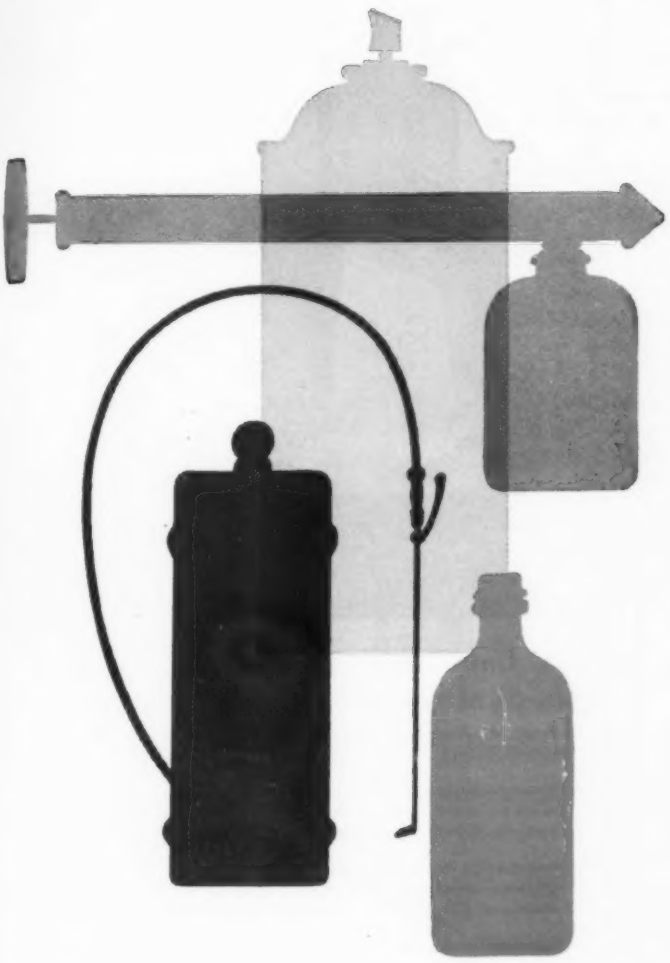

Why GEIGY INSECTICIDES make your formulations better formulations

Choose the dependable Geigy product you need for *knockdown, positive kill, safety, long residual control and broad spectrum action.*

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Long residual action, effective, safe. For positive control of cockroaches (including resistant strains), ants, silverfish, and other household pests.

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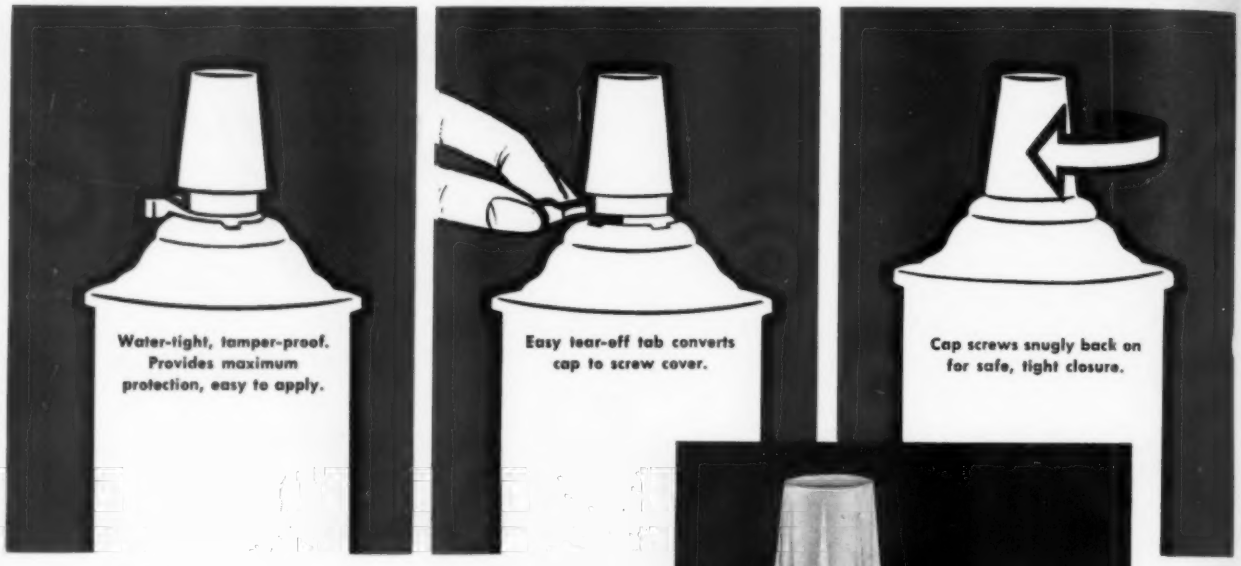
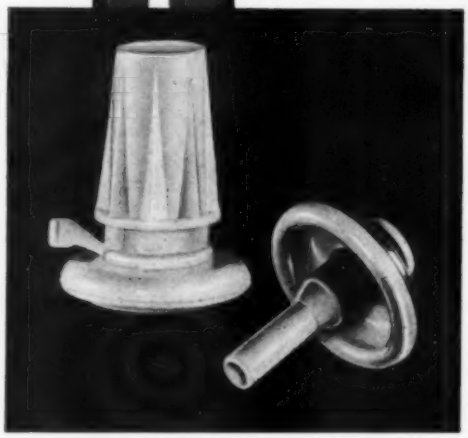
AERATED'S NEW TAMPER-PROOF TEAR-N-SCRU COVER* AND NON-METALLIC, LOW-COST, AERCON TILT VALVE*


Water-tight, tamper-proof. Provides maximum protection, easy to apply.
Easy tear-off tab converts cap to screw cover.
Cap screws snugly back on for safe, tight closure.



At last! Here is a completely tamper-proof, screw-type cover. Combined with Aerated's unique Aercon Tilt Valve,* it's the newest, most desirable unit for food and non-food products. Aerated's valve and cover combination are ideal for all foam and liquid products, regardless of viscosity or density. The low-price, yet high-quality, typical of the complete line of Aerated's valves and processing equipment, make this perfect pair your most profitable to specify and buy. Contact Aerated direct for information on wide range of valve availabilities and processing equipment.

Here's Proof Of Why This New Unit Is Your Best Buy

NEW TEAR-N-SCRU COVERS*

- Unique cover is completely tamper-proof. It has to be torn open.
- One simple step converts cap into easy, tight-sealing screw-on cover.
- Completely waterproof cover is ideal for high-speed, efficient filling operations.
- Covers come in a variety of colors, and are made of inert material that is not affected by temperature.
- Cover eliminates contact between nozzle and cap, assuring a sanitary product.
- Cover upgrades your product and has high consumer merchandising appeal.

PLAIN OR DECORATOR TIP AERCON TILT VALVES*

- Patented spring diaphragm incorporating a limit lock guarantees uniform preloading and quick acting shut-off.
- Specially designed valve seat assures leakproof seal and provides an easily controlled flow for accurate, upsidedown dispensing, directly where required.
- Pressure fills fast and economically with all food and non-food products. Decorator's tip delivers a pattern foam, with maximum over-ride, prevents glossing, and eliminates upsurging.
- Low price and wide range of valve availabilities are the result of carefully controlled research and testing.

*Aerated valves and covers protected by one or more of the following Patents: U.S. Pat. No. 2,612,293, 2,877,936—BRITISH Pat. 771,141—CANADIAN Pat. 506,911. Other U.S. and foreign Patents pending.

ingenious aerosol research and manufacturing since 1946

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TAKE AIM AT BANG-UP PROFITS!

SENSATIONAL NEW QUALITY LOW COST ALFCO SPRAY-CAN HANDLE NOW PRICE-TAILORED TO "FIT" YOUR SALES AND MERCHANDISING PROGRAMS!

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Line up valve button with handle. Hook over forward lip, hold with index finger and press down. To remove, lift up on handle.

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Spray-Can Handle MAINTAINS QUALITY DRASTICALLY REDUCES YOUR COST

No matter what you package in an aerosol can, *you'll broaden customer use, make more sales with ALFCO'S new low cost Spray-Can Handle.* What's more, you'll *keep* selling more of your product to more satisfied customers who'll find new cleanliness, less "finger fatigue," new ease and convenience in using it. The new ALFCO Spray-Can Handle adds even more prestige to what you have to sell through its smart, modern design and quality construction. And you can personalize it, identify it with your product, by means of your own private label!

Protect your reputation with ALFCO'S higher quality—lower cost

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INSECTICIDES... Easier spraying of hard-to-reach areas of house and garden. Keeps hands from contact with toxic sprays.
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HAIR SPRAYS... Your customers spray hair with great ease and pinpoint accuracy for even application. Ideal for beauty parlors.
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Breck's aerosol filling and packaging operations are handled entirely by contract packagers, who also assist in quality control and technical studies. "By utilizing their services, we get the same speed and quality we demand in our own operation," President Edward J. Breck states, "without any investment in packaging and filling equipment."

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DISSATISFIED CUSTOMERS ARE A HIDDEN COST!

REJECTS MAY BE THE REASON!

A high reject rate means dissatisfied consumers, and excessive costs. Defective units drain away your customers and reduce the value of your promotional dollars. When you reduce rejects you increase profits directly. So be sure, when you purchase aerosal valves for *your* product you have specified the best . . . PRECISION VALVES. PRECISION quality controls assure you of minimum rejects, maximum profits.

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AEROSOL BUYER'S GUIDE 1961-1962

How to use the Aerosol Buyer's Guide:

Where practicable, all components and services have been listed in alphabetical order, except in the case of various equipment categories, which appear under "Equipment."

The page numbers appearing after the company listings indicate advertisements (on other pages of the magazine) which will enable the reader to find further information about the product line or service offered by the listed firm.

Alphabetical Listing By Category

Actuator Button Placers 56
Anhydrous Alcohol 56
Antibiotics 57
Can Unscramblers 44
Capping Equipment 45
Cartoners and Carton Packers 45
Coding Devices 46
Compressors 46
Consultants and Research Agencies 36
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Container Cleaners and Purgers 45
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Containers, Glass 37
Containers, Jumbo-Size Metal 38
Containers, Pharmaceutical 38
Containers, Plastic-Coated Glass 38
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Containers, Specialty Metal 38
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Valves, Paint 60
Valves, One-Shot 60
Valves, Ultrafine Particle Size 60
Weighers and Classifiers 51

AEROSOL TRADE ASSOCIATIONS

Canadian Manufacturers of Chemical Specialties Association
3405 Cote des Neiges Road
Montreal 25, Que., Canada

British Aerosol Manufacturers Association
Cecil Chambers
86 Strand
London W.C. 2, England

Chemical Specialties Manufacturers Association
50 East 41st Street
New York 17, N. Y.
MUrray Hill 5-8722

See Page 124

Compressed Gas Association
500 Fifth Avenue
New York 36, N. Y.

Federation of European Aerosol Associations
2 Waisenhausstrasse
Zurich 1, Switzerland

Finnish Aerosol Association
Etelaranta 4
Helsinki, Finland

French Aerosol Committee
Maison de la Chimie
28 Rue Saint Dominique
Paris 7, France

Interessen-Gemeinschaft Aerosole
1 Hse. Chemieverband
21 Karlstrasse
Frankfurt/Main, Germany

International Aerosol Association
2 Waisenhausstrasse
Zurich 1, Switzerland

Packaging Institute
Aerosol Committee
342 Madison Avenue
New York 17, N. Y.

Spanish Aerosol Association
Witardo 41
Barcelona, Spain

CAPS, See "Cover Caps"

CANS, See "Containers, Metal"

CONSULTANTS AND RESEARCH AGENCIES

Aeroprojects, Inc.
310 East Rosedale Street
West Chester, Pa.
OWen 6-4710
(Particle Size Analysis)

Battelle Memorial Institute
505 King Avenue
Columbus, Ohio
(Research)

Bio-Test Laboratories, Inc.
Northbrook, Ill.
(Toxicity, Irritation, and Sensitization Tests)

Crippen Laboratories, Inc.
1500 Guilford Avenue
Baltimore 2, Md.
VErnon 7-6650
(Product Development and Testing)

Cryo Engineering Co.
10 Greentree Drive
West Chester, Pa.
(Solvent Purification, Refrigeration, etc.)

Evans Research and Development Corp.
250 East 43rd Street
New York 17, N. Y.
MUrray Hill 3-0071
(Product Development and Evaluation)

Florida Chemists & Engineers, Inc.
645 Rugby Avenue
Orlando, Fla.
GArden 5-1595
(Product Development, Line Installation)

Food & Drug Research Laboratories, Inc.
Maurice Avenue at 58th Street
Maspeth 58, N. Y.
TWining 4-0800
(Toxicological and Inhalation Studies)

Robert A. Foresman, Jr., Aerosol Consultant
1690 Margaret Street
Philadelphia 24, Pa.
PIoneer 3-0596
(Development, Formulation, Testing, Plant Layout, Customer Service)

Walter Frank Organization
4100 Warren Avenue
Hillside, Ill.
LInden 4-6600
(Packaging Components)

See Page 139

Al Gaines
5100 Mulford Street
Skokie, Ill.
(Production, plant layout)

Harris Laboratories, Inc.
816 "P" Street
Lincoln 8, Neb.
(Toxicological Studies, Analyses)

Hazleton Laboratories
Falls Church, Va.
(Inhalation Studies, Toxicity Tests, Etc.)

Hudson Laboratories, Inc.
117 W. 13th Street
New York 11, N. Y.
ALgonquin 5-6290
(Toxicology, Dermatology, Etc.)

Insect Control & Research, Inc.
1115 Rolling Road
Baltimore 28, Md.
(Insecticide Performance Testing)

W. Alec Jordan Associates
290 Park Avenue
New York 17, N. Y.
(Product Market Studies)

Kurek Engineering
5201-B University Avenue
Madison 5, Wis.
CEdar 3-3771
(Selection and Modification of Production Equipment)

Leberco Laboratories
123 Hawthorne Street
Roselle Park, N. J.
CHestnut 5-1933
(Product Toxicity and Irritation Studies)

Arthur D. Little, Inc.
30 Memorial Drive
Cambridge 42, Mass.
(Research)

Lodes Aerosol Consultants
730 Fifth Avenue
New York 19, N. Y.
CIrcle 7-3170
(Product Development, Research, Plant Layout)

Pegasus International Corp.
41 West 57th Street
New York 19, N. Y.
(Overseas Representation)

Pressurized Packaging Consultants Ltd.
Ashbourne House
Alberon Gardens
London N.W. 11, England

Product Development Associates
P. O. Box 146
Jackson Heights 72, N. Y.
HAvermeyer 9-1421
(Valve and Dispenser Design)

Reed Research Corp
Mill Street
Shelton, Conn.
REgent 5-4858
(Research, Testing, Product Development)

Rosner-Hixson Laboratories
7737 South Chicago Avenue
Chicago 19, Ill.
REgent 4-0142
(Toxicity Testing, Irritation Studies)

Herbert V. Shuster, Inc.
655 Boyleston Street
Boston 16, Mass.
COmmonwealth 6-5520
(Food Toxicity and Testing)

Foster D. Snell, Inc.
29 West 15th Street
New York 11, N. Y.
WAtkins 4-8800
(Research, Testing, Formulation)
See Page 154

United States Testing Co.
1415 Park Avenue
Hoboken, N. J.
SWarthmore 2-2400
(Research, Testing, Toxicology)

Wisconsin Alumni Research Foundation
P. O. Box 2217-DD
Madison 1, Wisconsin
(Formulation, Labeling, Toxicity Testing)
See Page 140

CONTAINERS
(Aluminum)

Aluminum Co. of America
Alcoa Building
Pittsburgh 19, Pa.

Bombrini Parodi-Delfino
Mechanical Division
31 Via Lombardia
Rome, Italy
See Page 98

Bradley-Sun Division
American Can Co.
U. S. Highway 22
Union, N. J.
MUrdock 7-2500

Continental Can Co.
100 E. 42nd Street
New York 14, N. Y.
OXford 7-1200
See Page 81

Emson Research, Inc.
118 Burr Court
Bridgeport 5, Conn.
EDison 6-2553
See Page 132

General Impact Extrusions Ltd.
191 Evans Avenue
Toronto 18, Ont., Canada
CLifford 5-4489

Hampton Products Co.
Hester Street
Portland, Pa.
TWin Oaks 7-6103

Impact Container Corp.
11125 Walden Avenue
Alden, N. Y.
NT 3-7326 (Buffalo)
(Agents for Bombrini-Parodi Delfino)
See Page 14

Metal Fabrications, Inc.
202 Cherry Street
Waterbury 20, Conn.
See Pages 122, 136

Modern Containers, Ltd.
1190 Birchmont Road
Scarboro, Ont., Canada
PL 5-5236

Monobloc Aerosols, Ltd.
11 Newman Road
Bromley (Kent), England

Peerless Tube Corp.
58 Locust Avenue
Bloomfield, N. J.
PIlgrim 3-5100
See Page 61

Risdon Manufacturing Co.
Box 520
Naugatuck, Conn.
PArk 9-8231

Tubettificio Ligure
Abbadia Lariana
Lecco (Como), Italy
See Page 113

United States Can Co.
Subsidiary, Victor Metal Products Co.
Highway 67-N
Newport, Ark.

White Metal Mfg. Co.
1012 Grand Street
Hoboken, N. J.
OLdfield 9-2043

CONTAINERS
(Glass)

Brockway Glass Co., Inc.
Brockway, Pa.
BRockway 3015

Foster-Forbes Glass Co.
E. Charles Street
Marion, Ind.

Hazel Atlas Glass
Div. of Continental Can Co.
Wheeling, W. Va.

Maryland Glass Co.
2147-53 Wicomico Street
Baltimore 20, Md.

Narva Products Corp.
201 Verona Avenue
Newark, N. J.
See Page 140

Owens-Illinois Glass Co.
P. O. Box 1035
Toledo, Ohio
CHerry 2-6543

Richford Corporation
3618 Oceanside Road
Oceanside, N. Y.
ROckville Centre 6-2366

Wheaton Glass Co.
Millville, N. J.
TAylor 5-1400

CONTAINERS
(Jumbo-Size Metal)

Impact Container Corp.
11125 Walden Avenue
Alden, N. Y.
NT 3-7326 (Buffalo)
(Agents for Bombrini-Parodi Delfino)
See Page 14

Tube Manifold Corp.
419 Bryant Street
North Tonawanda, N. Y.
LUdlow 7900

CONTAINERS
(Pharmaceutical Respirators)

Thomas J. Mahon, Inc.
75 Brayton Street
Englewood, N. J.
LOwell 7-3900

CONTAINERS
(Plastic)

Apcon Co.
25th and King's Highway
Independence, Mo.
CLifton 4-6000

Bernardin Bottle Cap Co.
2201 W. Maryland Street
Evansville, Ind.

Colt's Plastic Co.
Putnam, Conn.
WAlnut 3-9514

Imco Container Corp
75th & Cleveland Streets
Kansas City, Mo.

National Plastic Products Co.
Odenton, Md.
SOuthfield 6-1000

Precision Valve Corp.
700 Nepperhan Avenue
Yonkers 3, N. Y.
YOnkers 9-6500
See Page 34

Pyro Plastics Corp.
690 Chestnut Street
Union, N. J.

Richford Corp.
5618 Oceanside Road
Oceanside, N. Y.
ROckville Centre 6-2366

Union Carbide Plastics Co. Division
Union Carbide Corp.
270 Park Avenue
New York 17, N. Y.

United Plastic Industries
1300 Water Street
Vassar, Mich.
VAssar 2431

Wheaton Plastics Co.
Mays Landing, N. J.
MA 5-4811

Wilmington Plastics Co.
810 S. Heald Street
Wilmington, Del.
OLympic 8-6401

CONTAINERS
(Plastic-Coated Glass)

Owens-Illinois Glass Co.
P. O. Box 1035
Toledo, O.
CHerry 2-6543

Wheaton Plasti-Cote Co.
Millville, N. J.
TAylor 5-1400

CONTAINERS
(Screw-on Top)

Builders Sheet Metal Works, Inc.
108 Wooster Street
New York 12, N. Y.
CAnal 6-5390
See Page 135

CONTAINERS
(Specialty Metal)

Bridgeport Metal Goods Manufacturing Co.
365 Cherry Street
Bridgeport 5, Conn.
FOrest 6-4701

Emson Research, Inc.
118 Burr Court
Bridgeport 5, Conn.
EDison 6-2553
See Page 132

Metal Fabrications, Inc.
202 Cherry Street
Waterbury 20, Conn.
See Pages 122, 136

Risdon Manufacturing Co.
Naugatuck, Conn.
PArk 9-8231

Tubing Seal Cap, Inc.
808 West Santa Anita Street
San Gabriel, Calif.

CONTAINERS
(Tin and Black Plate)

American Can Co.
100 Park Avenue
New York, N. Y.
MUrray Hill 6-4900
See Pages 93-95

Continental Can Co.
100 East 42nd Street
New York 14, N. Y.
OXford 7-1200
See Page 81

Crown Cork & Seal Co., Inc.
Can Division
9300 Ashton Road
Philadelphia 36, Pa.
ORchard 3-5100
See Page 77

CONTAINER FINISHING AND DECORATING

Bridgeport Metal Goods Mfg. Co.
365 Cherry Street
Bridgeport 5, Conn.
FOrest 6-4701

Britel Products, Inc.
102 Straight Street
Paterson, N. J.
ARmory 4-5767

Eyelet Specialty Division
International Silver Co.
P.O. Box 179
Wallingford, Conn.
COlony 9-1407

Metal Fabrications, Inc.
202 Cherry Street
Waterbury 20, Conn.

See Pages 122, 136

Monroe-Danford & Co.
50 48th Street
Weehawken, N. J.
UNion 6-1277

Plastic Art Metallizing Corp.
68-70 Freeman Street
Brooklyn 22, N. Y.
EVergreen 3-7171

CONTAINER RAW MATERIALS

(See "Nylon and Other Resins")

COVER CAPS AND CLOSURES

Aerosol Research Co.
743 S. Circle Avenue
Forest Park, Ill.
FOrest 6-4880

See Page 3

Aerated Container Corp.
Dairy Whipt Division
39 S. LaSalle Street
Chicago, Ill.
CEntral 6-7460

See Page 30

Armstrong Cork Co.
5403 Cornell Avenue
Lancaster, Pa.
Express 7-5151

Bristol Flowed Gasket Co.
P. O. Box 382
Southington, Conn.

Britel Products, Inc.
102 Straight Street
Paterson, N. J.
Armory 4-5767

J. L. Clark Manufacturing Co.
2300 Sixth Street
Rockford, Ill.

Clayton Corp.
4205 Forest Park Boulevard
St. Louis 8, Mo.
JEfferson 5-6226

See Page 64

Clinton Valves, Inc.
35135 Groesbeck Highway
Mt. Clemens, Mich.

Eastern Cap & Closure Co.
726 N. Kresson Street
Baltimore 5, Md.
EAstern 7-5640

See Page 144

Eyelet Specialty Division
International Silver Co.
P.O. Box 179
Wallingford, Conn.
COlony 9-1407

Gilbert Plastics, Inc.
Boright Avenue
Kenilworth, N. J.

Ludwig Closures
185 Oakland Street
Brooklyn 22, N. Y.
EVergreen 3-2197

See Page 126

Mack Molding Co.
Wayne, N. J.
MOuntain View 8-0800

Metal Fabrications, Inc.
202 Cherry Street
Waterbury 20, Conn.

See Pages 122, 136

Monroe-Danford & Co.
50 48th Street
Weehawken, N. J.
UNion 6-1277

Owens-Illinois Glass Co.
P. O. Box 1035
Toledo, O.
CHerry 2-6543

Penn Cork & Closures, Inc.
115 Manhattan Avenue
Brooklyn 22, N. Y.
EVergreen 9-4416

See Page 112

PharmaPlastics, Inc.
205 S. Smallwood Street
Baltimore 23, Md.
CEnter 3-7311

See Page 75

Precision Valve Corp.
700 Nepperhan Avenue
Yonkers 3, N. Y.
YOnkers 9-6500

See Page 34

Risdon Manufacturing Co.
Box 520
Naugatuck, Conn.
PArk 9-8231

Ristau, Pieper & Co.
Ludenscheid/Westf.
West Germany

Scott Plastics
410 Windsor Street
Hartford 5, Conn.

Scovill Manufacturing Co.
99 Mill Street
Waterbury 20, Conn.

Spra-Lok Corp.
Subsidiary of Dupli-Color Products Co.
2440 S. Michigan Avenue
Chicago 16, Ill.
CAlument 5-3734

Sterling Seal Co.
316 West 16th Street
Erie, Pa.
ERie 4-1568

Super Whip Valve Co.
4101 N. Rockwell
Chicago 18, Ill.

Sunbeam Plastics Corp.
P. O. Box 4038, Station A
Evansville, Ind.
HArrison 3-6201

Tubing Seal Cap, Inc.
808 West Santa Anita Street
San Gabriel, Calif.

Valve Corp. of America
1720 Fairfield Avenue
Bridgeport, Conn.
EDison 3-3165

See Page 10

Walter Frank Organization
4100 Warren Avenue
Hillside, Ill.
LInden 4-6600

See Page 139

West Penn Mfg. & Supply Corp.
809 Second Avenue
Brackenridge, Pa.
ACademy 4-5252

Wheaton Plastics Co.
Mays Landing, N. J.
MA 5-4811

Wheeling Stamping Co.
2116 Water Street
Wheeling, W. Va.
CEdar 3-4770

Wilmington Plastics Co.
810 S. Heald Street
Wilmington, Del.
OLympic 8-6401

A. H. Wirz, Inc.
Fourth & Townsend Streets
Chester, Pa.
CHester 3-6281

COVER CAP TAMPERPROOF SEAL

Aerosol Research Co.
743 S. Circle Avenue
Forest Park, Ill.
FOrest 6-4880

See Page 3

E. I. du Pont de Nemours & Co.
"Cel-O-Seal" Division
River Road
Buffalo 7, N. Y.

Newman-Green, Inc.
507 Interstate Road
Addison, Ill.
TErrace 2-1000

See Page 25

PharmaPlastics, Inc.
205 S. Smallwood Street
Baltimore 23, Md.
CEnter 3-7311

See Page 75

CUSTOM FILLERS

(These companies fill for the trade — many supply filled aerosol products for private labels)

Acrolite Products, Inc.
810 Martin Street
Rahway, N. J.
FUlton 1-4600

AeriForm Products Co.
23400 Park Street
Dearborn, Mich.
LOgan 3-2102

Aero-Chem Fillers, Inc.
1983 State Street Extension
Bridgeport 5, Conn.
EDison 3-4181

Aerocide Dispensers Ltd.
P. O. Box 9—Weston
Toronto 15, Ont., Canada
CHerry 4-1101

See Page 102

Aeropak, Inc.
5000 W. 41st Street
Chicago 50, Ill.
LAfayette 3-5600

Aeropak of New Jersey, Inc.
548 Belleville Turnpike
Kearney, N. J.
Wyman 8-8500

Aerosol Bug Blitzer Co.
10 Dell Park Avenue
Toronto, Ont., Canada

Aerosol Corp. of the South
P. O. Box 148
Arlington, Tenn.
UNiversity 7-2254

See Page 148

Aerosol Custom Pharmaceuticals, Ltd.
42 Milford Avenue
Toronto 15, Canada
CH 4-1947

Aerosol Methods
Ridge Road
Tylersport, Pa.
ALpine 7-6032

Aerosol of Georgia, Inc.
4113 Peachtree Road NE
Atlanta 19, Ga.
CEdar 7-0077

Aerosol Packaging of Canada, Ltd.
18 Civic Road
Scarborough, Ont., Canada
PLymouth 5-2711

Aerosol Techniques, Inc.
1730 State Street
Bridgeport, Conn.
EDison 6-0176

See Page 82

Airosol Co., Inc.
525 N. 11th Street
Neodesha, Kans.
Neodesha 149

American Aerosol Corp.
889 Gordon Street
Holland, Mich.
EXport 2-3025

AMR Chemicals Co., Inc.
985 East 35th Street
Brooklyn, N. Y.
CLoverdale 3-8300

Arlenge Laboratories
34 Hubert Street
New York 13, N. Y.
BEekman 3-6818

Armstrong Laboratories
421 LaGrange Street
W. Roxbury, Mass.
FAirview 3-7404

See Page 147

Associated Brands, Inc.
50 Wallabout Street
Brooklyn, N. Y.
ULster 5-2900

See Page 147

Atlantic Aerosol Associates, Inc.
Affiliate, Vim Laboratories Co.
Frederick, Md.

Atlantic Laboratories of Delaware
P. O. Box 1644
Wilmington 99, Del.
AXtel 9-5100 (Penns Grove, N. J.)

Automatic Filling Corp.
1213 No. Highland Avenue
Los Angeles 38, Calif.
HOllywood 9-7284

G. Barr & Co.
3601 S. Racine Avenue
Chicago, Ill.
YArds 7-1700

See Page 150

Capitol Packaging Co.
1501 N. 31st Street
Melrose Park, Ill.
COlumbus 1-6295

See Page 142

Cardel Enterprises
Bethridge Rd. Rexdale
Toronto, Canada
CHerry 4-1123

Chase Products Co.
Gardener Road
Broadview, Ill.
FIllmore 5-1222

See Page 33

Chemical Specialties Corp.
1007 West Maryland
P.P. Annex Box 3104
Evansville 10, Ind.
HArrison 5-1101
(high-pressure only)

ChemSpray Corp.
6727 Cadillac Street
Houston 21, Tex.
RIverside 7-9461

Cincinnati Aerosol Corp.
125 Terrace Drive
Cincinnati 15, Ohio

Claire Manufacturing Co.
7642 Vincennes Avenue
Chicago 20, Ill.
ABerdeen 4-6400

Claire Manufacturing Co.
1200 N.W. 23rd Avenue
Ft. Lauderdale, Fla.
LUdlow 3-7440

Cleveland Aerosol Packaging
9801 Harvard Avenue
Cleveland, O.
VUlcan 3-4800

Connecticut Chemicals (Canada) Ltd.
Curity Avenue & Hellinger Road
Toronto, Ont., Canada
PLymouth 5-5249

Consolidated Aerosols Corp.
1325 Second Avenue
New Hyde Park, L. I., N. Y.
HUnter 8-2330

Continental Filling Corp.
123 Hazel Street
Danville, Ill.
HIckory 6-7640

See Page 11

Continental Filling Corp.
Hobart, Ind.

See Page 11

Diamond Chemical Co.
Glen Gardiner, N. J.
CAlifon 188

Dupli-Color Products Co.
2440 South Michigan Avenue
Chicago 16, Ill.
Calumet 5-3734

Empress Cosmetics, Inc.
4747 Bronx Boulevard
Bronx 70, N. Y.
FA. 5-9400

Eska Chemical Corp.
375 Herzl Street
Brooklyn, N. Y.

See Page 148

Eveready Pressurized Prod., Inc.
1022 Belt Line Avenue
Cleveland, O.
SHadyside 1-1388

See Page 150

Fluid Chemical Co., Inc.
878 Mt. Prospect Avenue
Newark, N. J.
HUmboldt 4-1000

See Page 115

Fuld Bros., Inc.
702 South Wolfe Street
Baltimore 31, Md.
BRoadway 6-7400

Funkhouser Chemical Co. Division
Funkhouser Industries, Inc.
P. O. Box 8
Ransom, W. Va.
CHarles Town 988

Gard Industries, Inc.
1739 Harding Road
Northfield, Ill.
Wilmette 7007

See Page 150

General Aerosols, Inc.
Aerosol Filling Division
Mill Street
Shelton, Conn.
REgent 5-4858

Gebauer Chemical Co.
9408-10 St. Catherine Avenue
Cleveland, O.
BRoadway 1-5252

Grestco Dyes & Chemicals, Inc.
153 Classon Avenue
Brooklyn 5, N. Y.
MAin 2-6357

Haas Chemical Corp.
Aerosol Packaging Division
W. Linden and N. 8th Avenue
Scranton 3, Pa.
DIamond 4-2064

Hampton Products
Hester Street
Portland, Pa.
TWin Oaks 7-6103

Hot Shot Quality Products, Inc.
P. O. Box 297
Memphis, Tenn.

Hysan Products Co.
919 West 38th Street
Chicago, Ill.
FRontier 6-8900

IKI Manufacturing Co.
107 Maple Court
Edgerton, Wisc.
Edgerton 144

See Page 150

Illinois Bronze Powder Co.
2023 S. Clark Street
Chicago 16, Ill.
VI 2-0660

See Page 146

Impact Container Corp.
11125 Walden Avenue
Alden, N. Y.
NT 3-7326 (Buffalo)

See Page 14

Inland Paint & Chem. Co.
2144 West 49th Street
Chicago, Ill.
VIrginia 7-7511

The Jaylin Co.
6419 North Front Street
Philadelphia 20, Pa.
LIvingston 8-0517

Jet-Air Inc.
22 E. 22nd Street
Paterson 4, N. J.

Kan-Jax Chem. Co.
2500 Summit Avenue
Kansas City, Mo.

Kaysing Korp.
8005 Alabama
St. Louis 11, Mo.

Kent Industries
2641 Joy Road
Detroit 6, Mich.

Kerr Chemicals, Inc.
P. O. Box 189
Des Plaines, Ill.
VAnderbilt 7-4477

Kerr Chemicals, Inc.
Redwood City, Calif.

Kolmar of Canada, Ltd.
149 Victoria Avenue
Barrie, Ontario

Krylon, Inc.
Washington & Ford Streets
Norristown, Pa.
BRoadway 9-7880

LaMaur, Inc.
110 N. Fifth Street
Minneapolis, Minn.
FEderal 8-4771

Larson Laboratories
1320 Irwin Avenue
Erie, Pa.

Lawson Chemical Products Co.
1700 South Broadway
Gardena, Calif.
FAculty 1-4220

Lenk Manufacturing Co.
Claire Street
Franklin, Ky.
JUstice 6-3231

Marcy Laboratories, Inc.
2161 N. California Avenue
Chicago 47, Ill.
SPaulding 2-3900

See Page 150

McGuire & Co.
833 47th Avenue
Oakland, Calif.

Midwest Aerosols
7644 S. Vincennes Avenue
Chicago 20, Ill.
ABerdeen 4-6400

Midwest Consultants, Inc.
3500 DeKalb Street
St. Louis 18, Mo.
PRospect 1-5750

Miller Products Co.
7737 N.E. Killingsworth
Portland 18, Ore.

Mist Products, Inc.
Box 1756, Grand Central Station
New York 17, N. Y.
DEfender 5-6222

Mohawk Brush Co.
Aerosol Filling Division
Fuller Road
Albany, N. Y.

Mohawk Furniture Finishing Products, Inc.
175 West Main Street
Amsterdam, N. Y.
VIctor 3-1380

See Page 144

Morton Pharmaceuticals
1625 N. Highland
Memphis 8, Tenn.
FAirfax 7-5631

National Chemical Laboratories, Inc.
420 Monceaux Road
West Palm Beach, Fla.

National Spray Can Filling Corp.
6202 Avenue U
Brooklyn, N. Y.
CLoverdale 1-3350

See Page 151

New England Pharmaceutical
2013 Outer Drive
Dearborn, Mich.

Old Empire, Inc.
Mt. Prospect & Verona Ave.
Newark, N. J.
HUmboldt 4-2121

See Page 133

Pace, Inc.
P. O. Box 206
Wilmington 99, Del.
EAst 8-4151

See Page 141

Pacific Aerosol Packaging Co.
P. O. Box 36
Mt. Eden, Calif.
SUnset 2-1830

Panpack, Inc., Aerosol Division
Strong, Cobb & Arner, Inc.
High Street
Attica, N. Y.
ATtica 898

Par Industries, Inc.
2193 East 14th Street
Los Angeles 21, Calif.
TRinity 2668

See Page 137

Pennsylvania Engineering Co.
1107-21 N. Howard Street
Philadelphia 23, Pa.
MArket 7-3635

Pentagon Chemicals, Ltd.
311 Churchill Boulevard
Montreal 23, Quebec (Canada)
OR 1-3434

Peterson Filling & Packaging Co.
Hegeler Lane
Danville, Ill.
HIckory 2-1400

See 3rd Cover

Plaze, Inc.
9401 Watson Industrial Park
St. Louis, Mo.
WOodland 1-3564

Powr-Pak, Inc.
145 Howard Avenue
Bridgeport, Conn.
FOrest 7-6495

See Page 48

Prepo Corp.
Edgerton, Wis.

Pressure Products Co.
Box 342
West Chester, Pa.
OWen 6-3363

Products Packaging Inc.
Box 1076, Station A
Cleveland 2, O.
WOodbine 1-8800

Professional Products Laboratories
1300 N. Fulton Street
Baltimore 17, Md.

Protection Chemical & Aerosol Products, Ltd.
5747 Souligny Street
Montreal 5, Canada

Puritan Aerosol Corp.
160 Washington Street N.
Boston, Mass.
RIchmond 2-3318

See Page 147

Ralm Products, Inc.
206 S. Larkin Avenue
Joliet, Ill.
SA 5-1663

Rand Chemical Products Co.
2626 S. Dearborn Street
Chicago, Ill.
CAlumet 5-2866

W. T. Rawleigh Co.
101 S. Liberty Avenue
Freeport, Ill.

Red Devil Chemicals Inc.
30 North West Street
Mount Vernon, N. Y.
MOunt Vernon 4-9880
(Paints and related products)

Regal Chemical Corp.
115 Dobbin Street
Brooklyn 22, N. Y.
EVergreen 9-8727

Rex Research Corp.
600 Montrose Avenue
Toledo 7, O.
JEfferson 6-4633

Ronor Corp. Division
Engine Parts Mfg. Co.
1360 West 9th Street
Cleveland, O.
MAin 1-5294

Rose Manufacturing Co.
200 Water Street
Poughkeepsie, N. Y.

Gene Rose Co., Inc.
2222 Lunt Avenue
Elk Grove Village, Ill.
NAtional 5-8715

See Page 155

Rudd Paint & Varnish Co.
1608 15th Avenue West
Seattle 99, Wash.
ATwater 3-1900

S&W Aerosol Corp.
10930 Elliott Avenue
El Monte, Calif.
CUmberland 3-2675

S & W Manufacturing Chemists
P. O. Box 274
Gainesville, Fla.
FRanklin 2-2138

Schaefer Paint Co.
334 Marion Street
Lancaster, Pa.

707 Co.
1530 Stillwell Avenue
New York 61, N. Y.

Shield Chemical Co.
50 Brook Road
Needham Heights, Mass.
HIllcrest 4-6120

Slick Shine Packaging Co.
207 Astor Street
Newark 5, N. J.
BIgelow 3-7424

See Page 148

Southeastern Packaging Co.
4700 96th Street N.
St. Petersburg 38, Fla.
391-1924

SpraPak Chemical Co.
260 Meserole Street
Brooklyn 6, N. Y.

Sprayon Products Co.
2075 East 65th Street
Cleveland, O.
HEnderson 2-2900

See Page 146

Sprayway, Inc.
7644 Vincennes Avenue
Chicago 20, Ill.
STewart 3-5441

Spruhtechnik GMBH
Rheinfelden/Baden, Germany

See Page 151

Stalfort Pressure-Pak Corp.
321 W. Pratt St.
Baltimore 1, Md.
SAratoga 7-4760

See 2nd Cover

Stanley Home Products Co.
National Contracts Division
116 Pleasant Street
Easthampton, Mass.
EAsthampton 1000

Stewart-Hall Chemical Co.
17 Northwest Street
Mount Vernon, N. Y.

Strobel Products, Inc.
2609 Congress St.
Louisville, Ky.
SPring 2-2705

Strouse, Inc.
Main & Astor Streets
Norristown, Pa.
BRoadway 2-2211

John Struthers Co. Division
Aerocide Dispensers, Ltd.
5710 Royalmount Avenue
Montreal 9, Canada
RIverside 7-2841

See Page 102

Sun Lac, Inc.
195 Terminal Avenue
Clark, N. J.
FUlton 1-7500

See Page 134

Tested Products Co. Division
3901 N. Kingshighway Boulevard
St. Louis 15, Mo.
EVergreen 3-1234

Tops Products Co. Division
Twentieth Century Cosmetics
203 E. 12th Street
New York 3, N. Y.

Van Pell Chemical & Supply Corp.
48 East First Street
New York 3, N. Y.

Vim Laboratories Co.
P. O. Box 4038
Washington, D. C.

Virginia Chemicals & Smelting Co.
West Norfolk, Va.
EXport 7-3441

Vixen Chemical Corp
201 Verona Avenue
Newark 4, N. J.

Western Filling Corp.
6423 Bandini Boulevard
Los Angeles 23, Calif.
RAymond 3-9177

See Page 104

Whitmire Research Labs., Inc.
339 S. Vanderventer Street
St. Louis 10, Mo.

Wyatt Products, Inc.
685 Metal Road, N.E.
Atlanta 9, Ga.
TRinity 5-8881

Zenith Chemical Corp.
175 Mt. Pleasant Avenue
Newark, N. J.
HUmboldt 4-8600

DIP TUBING

Action Plastics Division
Colorite Plastics of N. J.
50 California Avenue
Paterson, N. J.
ARmory 8-2600

Anesite Co.
3575 Touhy Avenue
Skokie, Ill.

Anchor Plastics
36-36 36th Street
Long Island City, N. Y.
RAvenswood 9-1494

See Page 143

Walter Frank Organization
4100 Warren Avenue
Hillside, Ill.
LInden 4-6600

See Page 139

Hydrawlik Co.
131 East First Avenue
Roselle, N. J.
CHestnut 5-0368

Jordan Manufacturing Co.
Des Plaines, Ill.
VAnderbilt 4-4121

Plastic Extruded Products Co.
308 Port Avenue
Elizabeth 1, N. J.
ELizabeth 4-2300

United States Gasket Co. Division
The Garlock Packing Co.
Camden 1, N. J.

EMULSIFIERS

American Cholesterol Products Inc.
Amerchol Park
Edison, N. J.
LIberty 8-6600

See Page 13

Antara Chemicals Division
General Aniline & Film Corp.
435 Hudson Street
New York 14, N. Y.
WAtkins 4-0600

See Page 27

Atlas Industries, Inc.
Chemicals Division
Wilmington 99, Del.
OLympia 8-6511

Commercial Solvents Corp.
260 Madison Avenue
New York 16, N. Y.

Kessler Chemical Co.
State Road and Cottman Avenue
Philadelphia 35, Pa.
DE 2-26565

Knapp Products, Inc.
178 Hamilton Avenue
Lodi, N. J.
PRescott 9-6945

Nopco Chemical Co.
60 Park Pl.
Newark, N. J.

Rohm & Haas Co.
Agricultural Chemicals Dept.
Washington Square
Philadelphia 5, Pa.

See Page 15

Sole Chemical Corp.
7740 South Chicago Avenue
Chicago 19, Ill.

Stepan Chemical Co.
427 W. Randolph Street
Chicago 6, Ill.

Witco Chemical Co.
122 E. 42nd Street
New York 17, N. Y.
MUrray Hill 7-7979

EQUIPMENT

Actuator Button Placers

PMC Industries, Inc.
293 Hudson Street
Hackensack, N. J.
DIamond 2-3684

See Page 114

E. J. McKernan Co.
314 E. Chicago Street
ELgin, Ill.

Westoak Machines, Inc.
30 North West Street
Mount Vernon, N. Y.
MOunt Vernon 4-3114

Can Unscramblers

Chisholm-Ryder Co. of Pennsylvania
Blettner Avenue
Hanover, Pa.
MElrose 7-2123

Arthur Colton Co. Division
Snyder Corp.
3598 E. Lafayette
Detroit 7, Mich.

Dudley Machinery Corp.
P. O. Box 143
Santa Clara, Calif.

Climax Products Division
Lodge & Shipley Co.
3055 Colerain Avenue
Cincinnati 25, O.

Food Machinery & Chemical Corp.
342 W. Julian Street
San Jose 6, Calif.
CYpress 4-8124

Horix Manufacturing Co.
2601 Chartiers Avenue
Pittsburgh 4, Pa.
FEderal 1-0622

Island Equipment Corp.
P.O. Box 380276
Miami 38, Fla.

J. G. Machine Works
14-20 Poplar Avenue
Little Ferry, N. J.
HU 7-1173

See Page 17

Kartridg-Pak Co.
800 West Central Road
Mount Prospect, Ill.
CLearbrook 3-2800

Pneumatic Scale Corp., Ltd.
67 Newport Avenue
Quincy 71, Mass.

See Page 97

U. S. Bottlers Machinery Co.
4015 North Rockwell Street
Chicago 18, Ill.
IRving 8-0263

Capping Equipment

Arenco Machine Co.
25 West 43rd Street
New York 36, N. Y.
BRyant 9-9250

Burt Machine Co.
401 E. Oliver Street
Baltimore 2, Md.
SAratoga 7-2120

Consolidated Packaging Machinery Corp.
1400 West Avenue
Buffalo 13, N.Y.

See Page 127

Index Industrial Corp.
150 Broadway
New York 38, N. Y.
BEekman 3-4180

Kartridg-Pak Co.
800 West Central Road
Mount Prospect, Ill.
CLearbrook 3-2800

Pneumatic Scale Corp., Ltd.
67 Newport Avenue
Quincy 71, Mass.

See Page 97

Resina Automatic Machinery Co.
572 Smith Street
Brooklyn 31, N. Y.
TRiangle 5-5496

Cartoners and Carton Packers

Bivans Corp.
2431 Dallas Street
Los Angeles 31, Calif.

Burt Machine Co.
401 E. Oliver Street
Baltimore 2, Md.
SAratoga 7-2120

Chisholm-Ryder Co. of Pennsylvania
Blettner Avenue
Hanover, Pa.
MElrose 7-2133

Clybourn Machine Corp.
6479 N. Avondale
Chicago 31, Ill.
NEwcastle 1-8000

J. L. Ferguson Co.
2212 W. Jefferson Street
Joliet, Ill.

R. A. Jones & Co.
P. O. Box 485
Cincinnati, O.

EQUIPMENT *(Continued)*

National Equipment Corp.
153-7 Crosby Street
New York, N. Y.
CAnal 6-5333

Pneumatic Scale Corp.
65 Newport Avenue
North Quincy 71, Mass.

See Page 97

Standard-Knapp Division
Emhart Mfg. Co.
Portland, Conn.

Stokes & Smith Co.
4915 Summerdale Avenue
Philadelphia, Pa.

Triangle Package Machinery Co.
6633 West Diversey Boulevard
Chicago, Ill.
TUxedo 9-0200

Container Cleaning and Purging Equipment

Chisholm-Ryder Co. of Pennsylvania
Blettner Avenue
Hanover, Pa.
MElrose 7-2133

Arthur Colton Co. Division
Snyder Corp.
3598 E. Lafayette
Detroit 7, Mich.

See Page 136

Continental Can Co.
100 East 42nd Street
New York 17, N. Y.
OXford 7-1200

See Page 81

Crown Cork & Seal Co., Inc.
9300 Ashton Road
Philadelphia 36, Pa.
ORchard 3-5100

See Page 77

Food Machinery & Chemical Corp.
342 W. Julian Street
San Jose 6, Calif.
CYpress 4-8124

Island Equipment Corp.
P. O. Box 380276
Miami 38, Fla.

J. G. Machine Works
14-20 Poplar Avenue
Little Ferry, N. J.
HU 7-1173

See Page 17

Karl Kiefer Machine Co.
934 Martin Street
Cincinnati 2, O.

See Page 7

Kartridg-Pak Co.
800 West Central Road
Mount Prospect, Ill.
CLearbrook 3-2800

Standard-Knapp Division
Emhart Manufacturing Co.
Portland, Conn.

U. S. Bottlers Machinery Co.
4015 North Rockwell Street
Chicago 18, Ill.
IRving 8-0263

EQUIPMENT *(Continued)*

Coding Devices

Bell-Mark Corp.
18 Ropes Place
Newark 7, N. J.

Adolph Gottscho Inc.
6 Evans Terminal
Hillside, N. J.
FLanders 1-1500

See Page 132

Industrial Marking Equipment Co.
655 Berriman Street
Brooklyn 8, N. Y.
NI 9-3305

JCL Engineering Co.
P. O. Box 36 (Wilshire-LaBrea Station)
Los Angeles 36, Calif.

Kiwi Coders Corp.
4027 North Kedzie Avenue
Chicago 18, Ill.

See Page 121

J. M. Lehman Co.
550 New York Avenue
Lyndhurst, N. J.

John R. Nalbach Engineering Co.
6139 Ogden Avenue
Chicago 50, Ill.
OLympic 2-0833

See Page 146

Compressors

Chicago Pneumatic Tool Co.
8 East 44th Street
New York 17, N. Y.
MUrray Hill 7-1700

Corken's, Inc.
P. O. Box 1062
Oklahoma City 1, Okla.
CEntral 5-5517

See Page 20

Gardner-Denver Co.
Quincy, Ill.

Ingersoll-Rand
11 Broadway
New York 4, N. Y.
DIgby 4-6070

The Wallace Co.
41 California Street
Bridgeport, Conn.
EDison 6-1141

Conveyors

Arthur Colton Co. Division
Snyder Corp.
3598 E. Lafayette
Detroit 7, Mich.

See Page 136

Eriez Manufacturing Co.
276 Magnet Drive
Erie, Pa.

See Page 131

Island Equipment Corp.
P. O. Box 380276
Miami 38, Fla.

General Conveyor Co., Ltd.
126 Willowdale Street
Willowdale 1, Ontario (Canada)
BAldwin 1-1944

J. G. Machine Works
14-20 Poplar Avenue
Little Ferry, N. J.
HU 7-1173

See Page 17

Kartridg-Pak Co.
800 West Central Road
Mount Prospect, Ill.
CLearbrook 3-2800

LePall Co.
234 Main Street
Cary, Ill.

Link Belt Co.
301 West Pershing Road
Chicago 9, Ill.

The Wallace Co.
41 California Street
Bridgeport, Conn.
EDison 6-1141

Wire Belt Co. of America
19 River Street
Winchester, Mass.
PArkview 9-5200

Crimpers (Production) and Crimper Heads

Aeratom, Ltd.
Rapperswil/SG, Switzerland

See Page 12

Aerosol Machinery Co.
80A Magnolia Avenue
Westbury, L. I., N. Y.
EDgewood 3-0875

See Pages 130, 142

Aerosol Products Division
Royal Products Corp.
86 Ames Court
Plainview, L. I., N. Y.
WElls 1-5450

See Page 128

Builders Sheet Metal Works, Inc.
108 Wooster Street
New York 12, N. Y.
CAnal 6-5390

See Page 135

Consolidated Packaging Machinery Corp.
1400 West Avenue
Buffalo 13, N. Y.

See Page 127

Economic Machinery Co. Division
Geo. J. Meyer Manufacturing Co.
60 Fremont Street
Worcester 3, Mass.

See Page 62

Gayle Engineering Co.
2443 East 27th Street
Los Angeles 58, Calif.
LUdlow 3-4223

See Page 123

Gebr. Mader
Postfach 59
Rapperswil/SG, Switzerland

J. G. Machine Works
14-20 Poplar Avenue
Little Ferry, N. J.
HU 7-1173

See Page 17

Karl Kiefer Machine Co.
934 Martin Street
Cincinnati 2, O.

See Page 7

Kartridg-Pak Co.
800 West Central Road
Mount Prospect, Ill.
CLearbrook 3-2800

LeMay Machine Co.
276 LeMay Ferry Road
St. Louis 5, Mo.
HUdson 1-3050

See Page 144

John R. Nalbach Engineering Co.
6139 Ogden Avenue
Chicago 50, Ill.
OLympic 2-0833

See Page 146

PMC Industries, Inc.
293 Hudson Street
Hackensack, N. J.
DIamond 2-3684

See Page 114

Filters and Filter Sheets

Alsop Engineering Corp.
Milldale, Conn.

Ertel Engineering Corp.
8-14 N. Front Street
Kingston 8, N. Y.

Filpaco Industries, Inc.
2426 South Michigan Avenue
Chicago 16, Ill.
CAlumet 5-8900

Karl Kiefer Machine Co.
934 Martin Street
Cincinnati 2, O.

See Page 7

Scientific Filter Co.
57 Rose Street
New York 38, N. Y.
BEekman 3-1210

Gasser-Shaker

Aerated Container Corp.
Dairy Whipt Division
39 South La Salle Street
Chicago 3, Ill.
CEntral 6-7460

See Page 30

Gayle Engineering Co.
2443 East 27th Street
Los Angeles 58, Calif.
LUdlow 3-4223

See Page 123

Kartridg-Pak Co.
800 West Central Road
Mount Prospect, Ill.
CLearbrook 3-2800

LeMay Machine Co.
276 LeMay Ferry Road
St. Louis 23, Mo.
HUdson 1-3050

See Page 144

John R. Nalbach Engineering Co.
6139 Ogden Avenue
Chicago 50, Ill.
OLympic 2-0833

See Page 146

Ingredient Fillers

Aeratom, Ltd.
Rapperswil/SG, Switzerland

See Page 12

Arthur Colton Co. Division
Snyder Corp.
3598 E. Lafayette
Detroit 7, Mich.

See Page 136

EQUIPMENT *(Continued)*

F. L. Burt Co.
571 Seventh Street
San Francisco 3, Calif.
KLondike 2-0020

Chisholm-Ryder Corp.
Blettner Avenue
Hanover, Pa.
MElrose 7-2123

DeGray Design, Inc.
900 25th Street
West Palm Beach, Fla.
TEmple 3-8257

Elgin Manufacturing Co.
200 Brook Street
Elgin, Ill.

Food Machinery & Chemical Corp.
342 W. Julian Street
San Jose 6, Calif.
CYpress 4-8124

Horix Manufacturing Co.
2601 Chartiers Avenue
Pittsburgh 4, Pa.
FEderal 1-0622

J. G. Machine Works
14-20 Poplar Avenue
Little Ferry, N. J.
HU 7-1173

See Page 17

Karl Kiefer Machine Co.
934 Martin Street
Cincinnati 2, O.

See Page 7

Kartridg-Pak Co.
800 West Central Road
Mt. Prospect, Ill.
CLearbrook 3-2800

Laub Engineering Co.
244 N. San Marino Avenue
San Gabriel, Calif.

MRM Co., Inc.
191 Berry Street
Brooklyn 11, N. Y.
EVergreen 7-3936

Multi-Fill Machine Co.
340 North Westwood Avenue
Toledo, O.

National Instrument Co.
2701 Rockwood Avenue
Baltimore 15, Md.
FOrest 7-9124

The Pfaudler Co. Division
Pfaudler Permutit Inc.
Clark Street
Rochester 3, N. Y.

Popper & Sons, Inc.
300 Fourth Avenue
New York 10, N. Y.
ORegon 4-5500

Pressure Pak, Inc.
420 Monceaux Road
West Palm Beach, Fla.

See Pages 132, 140

Labelers

Burt Machine Co.
401 E. Oliver Street
Baltimore 2, Md.
SAratoga 7-2120

Chisholm-Ryder Co. of Pennsylvania
Blettner Avenue
Hanover, Pa.
MElrose 7-2133

Crompton & Knowles Packaging Corp.
Holyoke, Mass.

EQUIPMENT *(Continued)*

Economic Machinery Co. Division
Geo. J. Meyer Mfg. Co.
60 Fremont Street
Worcester 3, Mass.
See Page 62

Globe Ticket Co.
112 North 12th Street
Philadelphia 7, Pa.
LOcust 7-2800

Labelette Co.
216 So. Jefferson Street
Chicago 6, Ill.
FRanklin 2-1215
See Page 119

MRM Co.
191 Berry Street
Brooklyn 11, N. Y.
EVergreen 7-3936

Laboratory Filling Equipment

Aeratom, Ltd.
Rapperswil/SG, Switzerland
See Page 12

Aerosol Machinery Co.
80A Magnolia Avenue
Westbury, L. I., N. Y.
See Pages 130, 142

Builders Sheet Metal Works
108 Wooster Street
New York 12, N. Y.
CAnal 6-5390
See Page 135

Druk-Pak Inc.
36 Merkurstrasse
Zurich, Switzerland
See Page 152

Robert A. Foresman, Jr.
Apparatus Division
1690 Margaret Street
Philadelphia 24, Pa.
PIoneer 3-0596

J. G. Machine Works
14-20 Poplar Avenue
Little Ferry, N. J.
HU 7-1173
See Page 17

Karl Kiefer Machine Co.
934 Martin Street
Cincinnati 2, Ohio
See Page 7

Kartridg-Pak Co.
800 West Central Road
Mount Prospect, Ill.
CLearbrook 3-2800

LeMay Machine Co.
276 LeMay Ferry Road
St. Louis 23, Mo.
CIrcle 6-6373
See Page 144

John R. Nalbach Engineering Co.
6139 Ogden Avenue
Chicago 50, Ill.
OLympic 2-0833
See Page 146

Pressure Pak, Inc.
420 Monceaux Road
West Palm Beach, Fla.
TEmple 3-1006
See Pages 132, 140

Laboratory Equipment (Miscellaneous)

Aerosol Machinery Co.
80A Magnolia Avenue
Westbury, L. I., N. Y.
(hand crimper, pressure burette)
See Pages 130, 142

Bete Fog Nozzle Inc.
309 Wells Street
Greenfield, Mass.
(spray counter)

Builders Sheet Metal Works, Inc.
108 Wooster Street
New York 12, N. Y.
CAnal 6-5390
(hand operated assembly units, lab ware, screw-on caps, lab ware, etc.)
See Page 135

Fischer & Porter
111 Warminster Road
Warminster, Pa.
OSborne 5-6000
(Aerosol Compatibility Tube)

Robert A. Foresman, Jr.
Apparatus Division
1690 Margaret Street
Philadelphia 24, Pa.
PIoneer 3-0569
(torque meter, tank racks, test ovens, density units, etc.)

J. G. Machine Works
14-20 Poplar Avenue
Little Ferry, N. J.
HU 7-1173
(nitrogen pressure tester)
See Page 17

Karl Kiefer Machine Co.
934 Martin Street
Cincinnati 2, Ohio
(small run gasser, etc.)
See Page 7

Kartridg-Pak Co.
800 West Central Road
Mount Prospect, Ill.
CLearbrook 3-2800
(burette filler, bottle crimper, etc.)

Monsen Refrigeration
228 Montgomery Street
Bloomfield, N. J.
PIlgrim 3-0634
(refrigerated cabinets)

C. A. Spalding Co.
2242 East Venango Street
Philadelphia 34, Pa.
CUmberland 8-2021
(cap clinching machines)

Leak Detecting Equipment (Electronic and Gas Detectors)

Flamort Chemical Co.
746 Natoma Street
San Francisco 3, Calif.

General Electric Co.
1 River Road
Schenectady, N. Y.

Mine Safety Appliances Co.
230 North Braddock Avenue
Pittsburgh 8, Pa.

National Instrument Laboratories Inc.
828 Evarts Street N.E.
Washington, D. C.

Pressure Pak, Inc.
420 Monceaux Road
West Palm Beach, Fla.
TEmple 3-1006
(laboratory unit)

See Pages 132, 140

(Hot Water Test Tanks)

Builders Sheet Metal Works, Inc.
108 Wooster Street
New York 12, N. Y.
CAnal 6-5390

See Page 135

Island Equipment Corp.
P. O. Box 380276
Miami 38, Fla.

General Conveyor Co., Ltd.
126 Willowdale Street
Willowdale 1, Ontario (Canada)
BAldwin 1-1944

J. G. Machine Works
14-20 Poplar Avenue
Little Ferry, N. J.
HU 7-1173

See Page 17

Kartridg-Pak Co.
800 West Central Road
Mount Prospect, Ill.
CLearbrook 3-2800

The Wallace Co.
41 California Street
Bridgeport, Conn.
EDison 6-1141

Mixing Equipment

Abbe Engineering Co.
420 Lexington Avenue
New York 17, N. Y.
COrtland 7-1115

Alsop Engineering Corp.
100 Center Street
Milldale, Conn.

Buschman Products, Inc.
114 East 40th Street
New York 16, N. Y.

Eastern Industries Inc.
Hamden 14, Conn.

Ertel Engineering Corp.
8-14 N. Front Street
Kingston 8, N. Y.

Falcon Manufacturing Division
First Machinery Corp.
211 Tenth Street
Brooklyn 15, N. Y.

Filpaco Industries, Inc.
2426 South Michigan Avenue
Chicago 16, Ill.
CAlumet 5-8900

Mixing Equipment Co.
185-N Mt. Read Boulevard
Rochester, N. Y.

Builders Sheet Metal Works, Inc.
108 Wooster Street
New York 12, N. Y.
CAnal 6-5390

See Page 135

EQUIPMENT *(Continued)*

Production Filling Lines

Aerated Container Corp.
Dairy Whipt Division
39 South LaSalle Street
Chicago 3, Ill.
CEntral 6-7460

See Page 30

Aeratom, Ltd.
Rapperswil/SG, Switzerland
(pressure fill)

See Page 12

Aerosol Machinery Co.
80A Magnolia Avenue
Westbury, L. I., N. Y.
EDgewood 3-0875
(small production pressure fill)

See Pages 130, 142

Builders Sheet Metal Works, Inc.
108 Wooster Street
New York 12, N. Y.
CAnal 6-5390
(small production cold fill)

See Page 135

Druk Pak, Ltd.
Limmatquai/Rossligassi 8
Zurich 1, Switzerland
(pressure fill)

See Page 132

Economic Machinery Co. Division
Geo. J. Meyer Manufacturing Co.
60 Fremont Street
Worcester 3, Mass.
(pressure only)

See Page 62

J. G. Machine Works
14-20 Poplar Avenue
Little Ferry, N. J.
HU 7-1173
(pressure only)

See Page 17

Karl Kiefer Machine Co.
934 Martin Street
Cincinnati 2, O.

See Page 7

Kartridg-Pak Co.
800 West Central Road
Mount Prospect, Ill.
CLearbrook 3-2800
(pressure and cold)

Kurek Engineering Co.
5201-B University Avenue
Madison 5, Wis.
Cedar 3-3771

LeMay Machine Co.
276 LeMay Ferry Road
St. Louis 23, Mo.
HUdson 1-3050

See Page 144

John R. Nalbach Eng. Co.
6139 Ogden Avenue
Chicago 50, Ill.
OLympic 2-0833

See Page 146

Pressure Pak, Inc.
420 Monceaux Road
West Palm Beach, Fla.
TEmple 3-1006
(small-run pressure fill)

See Pages 132, 140

EQUIPMENT *(Continued)*

Propellant Storage & Handling Systems

Doyle & Roth Manufacturing Co.
136 24th Street
Brooklyn 32, N. Y.

Kartridg-Pak Co.
800 West Central Road
Mount Prospect, Ill.
CLearbrook 3-2800

H. Emerson Thomas & Associates
P. O. Box 270-B
Westfield, N. J.
ADams 2-2800

Vilter Manufacturing Co.
2217 S. First Street
Milwaukee 7, Wisc.

The Wallace Co.
41 California Street
Bridgeport, Conn.
EDison 6-1141

Propellant Storage Tanks

Arrow Equipment Co.
P. O. Box 2682
Memphis, Tenn.

Delta Tank Manufacturing Co.
Subsidiary, General Gas Corp.
Baton Rouge, La.

Master Tank & Welding Co.
2000 S. Front Street
Quincy, Ill.
BAldwin 3-5014

Master Tank & Welding Co.
P. O. Box 5146
Dallas, Tex.
RIverside 7-2441

Pressed Steel Tank Co.
1445 S. 66th Street
Milwaukee 14, Wis.
GReenfield 6-0500

H. Emerson Thomas Associates
P. O. Box 270-B
Westfield, N. J.
ADams 2-2800

Trinity Steel Co.
Engineering Division
4001 Irving Boulevard
Dallas 12, Texas
FLeetwood 7-3961

Pumps

Alsop Engineering Corp.
Milldale, Conn.

Aurora Pump Division
The New York Air Brake Corp.
62 Loucks Street
Aurora, Ill.

Beach-Russ Co.
420 Lexington Avenue
New York 17, N. Y.

Corkens, Inc.
P. O. Box 1062
Oklahoma City 1, Okla.
CEntral 5-5517

See Page 20

Eco Engineering Co.
12 New York Avenue
Newark 1, N. J.

Ertel Engineering Corp.
8-14 N. Front Street
Kingston 8, N. Y.

Gebr. Mader
Postfach 59
Rapperswil/SG, Switzerland

Gray Company, Inc.
22 Graco Square
Minneapolis 13, Minn.

J. G. Machine Works
14-20 Poplar Avenue
Little Ferry, N. J.
HU 7-1173

See Page 17

The LaBour Co., Inc.
Elkhart, Ind.

Viking Pump Co.
Cedar Falls, Iowa

The Wallace Co.
41 California Street
Bridgeport, Conn.
EDison 6-1141

Refrigeration Equipment

Atlas Engineering Co.
1901 White Street
Des Plaines, Ill.
VAnderbilt 4-5433

Kartridg-Pak Co.
800 West Central Road
Mount Prospect, Ill.
CLearbrook 3-2800

H. Loeb & Son
4600 Lancaster Avenue
Philadelphia, Pa.

Monsen Refrigeration
228 Montgomery Street
Bloomfield, N. J.
PIlgrim 3-0634

Vilter Manufacturing Co.
2217 S. First Street
Milwaukee 7, Wisc.

The Wallace Co.
41 California Street
Bridgeport, Conn.
EDison 6-1141

Valve Feeder & Inserter

Consolidated Packaging Machinery Corp.
1400 West Avenue
Buffalo 13, N. Y.

See Page 127

Kartridg-Pak Co.
800 West Central Road
Mount Prospect, Ill.
CLearbrook 3-2800

LeMay Machine Co.
276 LeMay Ferry Road
St. Louis 23, Mo.
HUdson 1-3050

See Page 144

John R. Nalbach Engineering Co.
6139 Ogden Avenue
Chicago 50, Ill.
OLympic 2-0833

See Page 146

PMC Industries, Inc.
293 Hudson Street
Hackensack, N. J.
DIamond 2-3684

See Page 114

Westoak Machines, Inc.
30 North West Street
Mount Vernon, N. Y.
MOunt Vernon 4-3114

Weighers & Classifiers

Exact Weight Scale Co.
538 E. Town Street
Columbus 15, O.
CApital 4-6187

Hi-Speed Checkweigher Co.
605 West State Street
Ithaca, N. Y.
IThaca 9041

Mettler Instrument Corp.
P. O. Box 100
Princeton, N. J.

Scale Specialties, Inc.
Box 574
Denville, N. J.
DEerfield 4-4808

Toledo Scale Co.
1097 Telegraph Road
Toledo 13, O.

MISCELLANEOUS EQUIPMENT

(Aerosol Dispensing Devices, Automatic)

Syncro-Mist Controls, Inc.
270 Madison Avenue
New York, N. Y.
MUrray Hill 5-4650

(Agitator Pellet Feeders)

J. G. Machine Works
14-20 Poplar Avenue
Little Ferry, N. J.
HU 7-1173

See Page 17

Kartridg-Pak Co.
800 West Central Road
Mount Prospect, Ill.
CLearbrook 3-2800

John R. Nalbach Engineering Co.
6139 Ogden Avenue
Chicago 50, Ill.
OLympic 2-0833

See Page 146

(Buttoner)

PMC Industries, Inc.
293 Hudson Street
Hackensack, N. J.
DIamond 2-3684

See Page 114

Westoak Machines, Inc.
30 North West Street
Mount Vernon, N. Y.
MOunt Vernon 4-3114

(Cellulose Cap-Banding Machine)

John Burton Machine Corp.
420 Market Street
San Francisco 11, Calif.

(Container Fill Inspection Systems)

Industrial Nucleonics Corp.
1205 Chesapeake Avenue
Columbus, Ohio

EQUIPMENT *(Continued)*

(Can Dryer)

Automation Design & Machinery Co.
1672 East 233rd Street
New York 66, N. Y.

(Crimping Gauge)

DeGray Design, Inc.
900 25th Street
West Palm Beach, Fla.

Robert A. Foresman Jr.
Apparatus Division
1690 Margaret Street
Philadelphia 24, Pa.
PIoneer 3-0596

Pressure Pak, Inc.
420 Monceaux Road
West Palm Beach, Fla.
TEmple 3-1006

See Pages 132, 140

(Fusible Safety Solder Seal—for Valves)

IKI Manufacturing Co.
107 Maple Street
Edgerton, Wis.

See Page 150

(Gas Regulators)

Air Reduction Co.
150 E. 42nd Street
New York 17, N. Y.
MUrray Hill 2-6700

See Page 23

(Heat Exchanger—for cold filling)

Chemetron Corp.
Girdler Process Equipment Division
334 E. Broadway
Louisville 2, Ky.
JU 7-7553

(Pallet Shaker—Automatic)

Gaynes Engineering Co.
1646 W. Fulton Street
Chicago, Ill.

(pH Meter)

Analytical Measurements, Inc.
585 Main Street
Chatham, N. J.

Harshaw Scientific Division
Harshaw Chemical Co.
1945 E. 97th Street
Cleveland 6, Ohio

(Product Homogenizer)

Buschman Products, Inc.
114 East 40th Street
New York 16, N. Y.

(Pyncometer)

T. M. Long Co.
Somerville, N. J.

Houston Instrument Co.
Box 22234
Houston 27, Texas

(Spray Can Handle)

Alfco, Inc.
4950 South Sepulveda Blvd.
Culver City, Calif.
UPton 0-6716

See Page 31

(Spray Tester for Button Placing)

PMC Industries, Inc.
293 Hudson Street
Hackensack, N. J.
DIamond 2-3684

See Page 114

(Tube Inserting Devices)

Chase Equipment Corp. of N. Y.
47 East 19th Street
New York 3, N. Y.
ORegon 7-3220

PMC Industries, Inc.
293 Hudson Street
Hackensack, N. J.
DIamond 2-3684

See Page 114

(Valve Assembly Unit)

American Special Machine Co.
1401 Western Avenue
Chicago 14, Ill.
EAstgate 7-2220

PMC Industries, Inc.
293 Hudson Street
Hackensack, N. J.
DIamond 2-3684

See Page 114

(Wall—Can Holder)

Lorac Industries
96 MacArthur Lane
Tarrytown, N. Y.
MEdford 1-3432

Useful Products Corp.
24 N. Clover Drive
Great Neck, N. Y.
HU 7-2517

ESSENTIAL OILS

See "Perfuming Materials"

FILLERS, See "Custom Fillers"

HAIR SPRAY RESINS

Ciba Co., Inc.
Route 208
Fairlawn, N. J.
SWarthmore 1-1122

General Aniline & Film Corp.
Acetylene Chemicals Division
435 Hudson Street
New York 14, N. Y.
(Polyvinylpyrollidone and PVP/VA Copolymers)

See Page 27

National Starch and Chemical Corp.
Resin Division
750 Third Avenue
New York 17, N. Y.

INSECTICIDE MATERIALS

American Cyanamid Co.
30 Rockefeller Plaza
New York 20, N. Y.
CIrcle 7-0100
(Malathion)

Diamond Alkali Co.
300 Union Commerce Building
Cleveland 14, Ohio
MAin 1-6100
(DDT, Benzene Hexachloride, Lindane)

E. I. du Pont de Nemours & Co.
Wilmington 98, Del.
(Methoxychlor)

Fairfield Chemical Division
Food Machinery & Chemical Corp.
441 Lexington Avenue
New York 17, N. Y.
OXford 7-1940
(Pyrethrum Concentrates, Dri-Die, Rotenone Resins, and Synergists)

See Back Cover

Geigy Agricultural Chemicals Division
Geigy Chemical Co.
Saw Mill River Road
Ardsley, N. Y.
(Methoxychlor, DDT, Diazinon)

See Page 29

General Chemical Division
Allied Chemical Corp.
40 Rector Street
New York 6, N. Y.
HAnover 2-7300
(Lindane, DDT, BHC)

See Pages 85, 87, 89, 91

R. W. Greeff & Co.
10 Rockefeller Plaza
New York 20, N. Y.
CIrcle 6-9680
(DDT)

Hercules Powder Co.
Agricultural Chemicals Division
984 Market Street
Wilmington 99, Del.
OLympia 8-7211
(Toxaphene, Thanite, Delnav)

Heyden Newport Chemical Co.
342 Madison Avenue
New York 17, N. Y.
(Strobane)

Olin Mathieson Chemical Corp.
10 Light Street
Baltimore, Md.
PLaza 2-8300
(DDT, BHC)

McLaughlin Gormley King Co.
1715 Fifth Street S.E.
Minneapolis, Minn.
FRanklin 1-1808
(Pyrethrum, Allethrin, and Synergists)

S. B. Penick & Co.
Agricultural Chemicals Division
4161 Beck Avenue
St. Louis 16, Mo.
(Pyrethrum, Synergists and Rotenone Resins)

See Page 105

Prentiss Drug & Chemical Co.
101 West 31st Street
New York 1, N. Y.
PEnnsylvania 6-6766
(Pyrethrum, Synergists, Sulfoxide, Butonate and Rotenone Resins)
See Page 22

Rohm & Haas Co.
222 W. Washington Square
Philadelphia 5, Pa.
LOcust 3-9860
(Lethane, Perthane and Rhothane)
See Page 15

Shell Chemical Corp.
Agricultural Chemicals Division
460 Park Avenue
New York 22, N. Y.
PLaza 5-5400
(Aldrin, Dieldrin, and Endrin)

Stauffer Chemical Co.
380 Madison Avenue
New York 17, N. Y.
OXford 7-0600
(DDT, Malathion)

Velsicol Chemical Corp.
330 E. Grand Avenue
Chicago 11, Ill.
DElaware 7-7383
(Chlordane, Heptachlor)

INSECT REPELLENTS

Cowles Chemical Co.
Organic Chemicals Dept.
1200 Shaker Boulevard
Cleveland 20, O.
(Diethyl Toluamide)

Glenn Chemical Co.
2735 N. Ashland Avenue
Chicago 14, Ill.
EAstgate 7-9350
(Tabatrex)

Fairfield Chemical Division
Food Machinery & Chemical Corp.
441 Lexington Avenue
New York 17, N. Y.
OXford 7-1940
(Crag Fly Repellent)
See Back Cover

Hercules Powder Co.
970 Market Street
Wilmington 99, Del.
(Diethyl Toluamide)

McLaughlin Gormley King Co.
1715 S.E. Fifth Street
Minneapolis, Minn.
FRanklin 1-1805
(MGK Repellent 11, MGK Repellent 32)

Naugatuck Chemical Division
Dominion Rubber Co., Ltd.
Elmira, Ont.
MOhawk 9-5466
(Diethyl Toluamide)

LANOLIN AND LANOLIN DERIVATIVES

American Cholesterol Products, Inc.
Talmadge Road
Edison, N. J.
LIberty 8-6600
See Page 13

American Lanolin Corp.
Railroad Street
Lawrence, Mass.
LAwrence 3-2729

Croda, Inc.
15 East 26th Street
New York 10, N. Y.
MUrray Hill 3-3089

Lanaetex Products, Inc.
151 Third Avenue
Elizabeth, N. J.
Elizabeth 2-7568

Malmstrom Chemical Corp.
259 Parkhurst Street
Newark 5, N. J.
Talbot 4-2200

Robinson Wagner Co.
628 Waverly Avenue
Mamaroneck, L. I., N. Y.

ODOR NEUTRALIZERS

Alpine Aromatics
Edison Industrial Center
U. S. Highway 1
Metuchen, N. J.
LIberty 8-7202
(Namée)
See Page 125

International Wax Refining Co.
99 E. Hawthorne Avenue
Valley Stream, N. Y.
(Intasol)

Motomco, Inc.
Terminal Avenue
Clark, N. J.
FUlton 1-3033
(Metazene)
See Page 145

National Cylinder Gas Division
Chemetron Corp.
1200 N. Claremont Avenue
Chicago 22, Ill.
HUmboldt 6-1462

Prentiss Drug & Chemical Co.
101 West 31st Street
New York 1, N. Y.
PEnnsylvania 6-6766
(Meelium)
See Page 22

Solvay Process Division
Allied Chemical Corp.
61 Broadway
New York 6, N. Y.
HAnover 2-7300
(Ozene)

PAINT, LACQUER & ENAMEL CONCENTRATES

Capitol Chemical Co.
4501 W. Haddon Avenue
Chicago 51, Ill.
ARmitage 6-9850

Illinois Bronze Powder Co.
2023 South Clark Street
Chicago 16, Ill.
VIctory 2-0660
See Page 146

Marbon Chemical Division
Borg-Warner Corp.
P. O. Box 68
Washington, W. Va.
VOlunteer 3-5353

Monroe Sander Corp.
10-18 46th Avenue
Long Island City, N. Y.
STillwell 4-4413
See Page 155

National Chemicals & Plastics Co.
1424 Philpot Street
Baltimore 31, Md.
PEabody 2-1783

See Page 151

PAINT RESINS

American Cyanamid Co.
30 Rockefeller Plaza
New York 20, N. Y.
CIrcle 7-0100
(Cycopol Resins)

Archer-Daniels-Midland
700 Investors Building
Minneapolis 2, Minn.

Capitol Chemical Co.
4501 W. Haddon Avenue
Chicago 51, Ill.
ARmitage 6-9850

Commercial Solvents Corp.
260 Madison Avenue
New York 16, N. Y.

Keystone Refining Co.
4821-31 Garden Street
Bridesburg, Philadelphia 37, Pa.

Lawter Chemicals, Inc.
3550 Touhy
Chicago 45, Ill.

Monroe Sander Corp.
10-18 46th Avenue
Long Island City, N. Y.
STillwell 4-4413

See Page 155

Shawinigan Resins Corp.
Springfield 1, Mass.

PERFUMING MATERIALS

Alpine Aromatics
Edison Industrial Center
U. S. Highway 1
Metuchen, N. J.
LIberty 8-7202

See Page 125

Aromatic Products, Inc.
235 Fourth Avenue
New York 3, N. Y.
ORegon 4-9114

Antoine Chiris Co.
220 East 23rd Street
New York, N. Y.
LExington 2-6035

Compagnie Parento, Inc.
68 Brook Street
Croton-on-Hudson, N. Y.

De Laire, Inc.
242 West 30th Street
New York 1, N. Y.
CHickering 4-7455

Dodge & Olcott, Inc.
Manhattan Industrial Center
75 Ninth Avenue
New York 11, N. Y.
WAtkins 4-3600

See Page 9

Ets. De Trevise
42 Rue de La Reine Henriette
Colombes (Seine), France

Ets. De Trevise
158 Copenhagen Street
London N. 1, England

Dragoco, Inc.
King Road
Totowa, N. J.
CLifford 6-3850

P. R. Dreyer Inc.
601 West 26th Street
New York 1, N. Y.
WAtkins 9-1570

Felton Chemical Co.
599 Johnson Avenue
Brooklyn, N. Y.
HYacinth 7-4464

See Page 120

Firmenich, Inc.
250 West 18th Street
New York 11, N. Y.
WAtkins 9-5520

Flam-Haft Laboratories, Inc.
832 Broadway
New York 3, N. Y.
ALgonquin 4-0118

Fleuroma, Inc.
43-23 37th Avenue
Long Island City, N. Y.
RAvenswood 1-8282

See Page 106

Florasynth Laboratories, Inc.
900 Van Nest Avenue
New York 62, N. Y.
TAlmadge 8-6000

See Page 134

Fries & Fries
110 East 70th Street
Cincinnati, Ohio
VAlley 1-7200

See Page 96

Fritzsche Brothers, Inc.
76 9th Avenue
New York 11, N. Y.
WAtkins 9-4100

Givaudan-Delawanna, Inc.
321 W. 44th Street
New York 36, N. Y.
CIrcle 5-0300

See Page 101

Heine & Co.
601 West 26th Street
New York 1, N. Y.
ORegon 5-9039

International Flavors & Fragrances, Inc.
521 West 57th Street
New York, N. Y.
CIrcle 6-2700

See Page 63

Knapp Products, Inc.
178 Hamilton Avenue
Lodi, N. J.
PRescott 9-6945

Lautier Fils Inc.
321 Fifth Avenue
New York 16, N. Y.
MUrray Hill 9-7980

Magnus, Mabee & Reynard, Inc.
16 Desbrosses Street
New York 13, N. Y.
WAlker 5-1110

J. Manheimer
214 East 21st Street
New York 10, N. Y.
GRamercy 5-4640

Norda Essential Oil & Chemical Co.
601 West 26th Street
New York 1, N. Y.
WAtkins 4-7878

Noville Essential Oil Co.
1312 Fifth Street
North Bergen, N. J.
UNion 7-9080

Orbis Products Corp.
601 West 26th Street
New York 1, N. Y.
WAtkins 4-7660

S. B. Penick & Co.
100 Church Street
New York, N. Y.
COrtland 7-1970

See Page 105

Perfumery Associates, Inc.
160 East 56th Street
New York 22, N.Y.
PLaza 3-8618

Perry Brothers
61-12 32nd Avenue
Woodside 77, L. I., N. Y.
RAvenswood 1-3636

PFW
33 Sprague Avenue
Middletown, N. Y.
DIamond 2-1065

See Page 21

Rhodia, Inc.
60 E. 56th Street
New York 22, N. Y.
PLaza 3-4850

P. Robertet, Inc.
221 Fourth Avenue
New York 3, N. Y.
OREgon 3-7585

Roubechez, Inc.
39 Roselle Street
Mineola, L. I., N. Y.
PIoneer 1-6610

See Page 18

Roure-Dupont, Inc.
366 Madison Avenue
New York, N. Y.
VAnderbilt 6-5830

See Page 28

Schimmel & Co.
Windsor Highway
Newburgh, N. Y.
JOhn 2-5530

See Page 4

Shulton, Inc.
Fine Chemicals Division
630 Fifth Avenue
New York 20, N. Y.
CIrcle 5-6263

Standard Aromatics
88 University Place
New York, N. Y.
OREgon 5-4333

Synfleur Scientific Laboratories
Monticello, N. Y.
Monticello 84

See Page 109

Syntomatic Corp.
114 East 32nd Street
New York 16, N. Y.
MUrray Hill 3-7618

Tombarel Products Corp.
725 Broadway
New York 3, N. Y.
GRamercy 7-4530

Ungerer & Co.
161 Ave. of the Americas
New York 13, N. Y.
ALgonquin 5-4660

Van Dyk & Co.
11 William Street
Belleville, N. J.
PLymouth 9-3225

Albert Verley & Co.
1375 E. Linden Avenue
Linden, N. J.
WAbash 5-1105

Verona Aromatics Division
Verona-Pharma Chemical Co.
26 Verona Avenue
Newark 4, N. J.
HUmboldt 3-3200

R. D. Webb & Co.
137 Boston Post Road
Cos Cob, Conn.

PLASTIC RESINS—"Delrin" and Nylon
(for manufacture of containers)

E. I. du Pont de Nemours & Co.
Polychemicals Division
Wilmington 98, Del.
PRospect 4-1000
(Delrin and Zytel)

Hercules Powder Co.
984 Market Street
Wilmington 99, Del.
OLympia 8-7211
(Profax)

Spencer Chemical Co.
Dwight Building
Kansas City 5, Mo.
(nylon)

PRODUCT CONCENTRATE
(Especially for Aerosol Packaging)

Chemical Compounding Co.
262 Huron Street
Brooklyn, N. Y.
EVergreen 8-8200

Hysan Products Co.
932 West 38th Street
Chicago, Ill.
VIrginia 7-1168

Pesticide Sales Corp.
415 Lexington Avenue
New York 17, N. Y.
MUrray Hill 7-8313

Private Brands Inc.
300 South Third Street
Kansas City 18, Kan.
FInley 2-8780

Propel Chemicals Inc.
262 Huron Street
Brooklyn 22, N. Y.
EVergreen 9-5531

Uncle Sam Chemical Co.
575 W. 131st Street
New York 27, N. Y.
AUdubon 6-2510

Wilco Co.
4425 Bandini Boulevard
Los Angeles 23, Calif.
ANgelus 3-4105

PROPELLANTS

(Fluorinated Hydrocarbons)

E. I. du Pont de Nemours & Co.
Freon Products Division
Wilmington 98, Del.
OLympia 4-5121
(Freon)

See Page 8

Farbwerke Hoechst A.G.
Frankfurt/Main, Germany
(Frigen)

General Chemical Division
Allied Chemical Corp.
40 Rector Street
New York 6, N. Y.
HAnover 2-7300
(Genetron)

See Pages 85, 87, 89, 91

Imperial Chemical Industries, Ltd.
Millbank
London S.W. 1, England
(Arcton)

See Page 116

Pennsalt Chemicals Corp.
3 Penn Center Plaza
Philadelphia 2, Pa.
LOcust 4-4700
(Isotron)

See Page 32

Union Carbide Chemicals Co.
Division, Union Carbide Corp.
270 Park Avenue
New York 17, N. Y.
MUrray Hill 7-8000
(Ucon)

See Pages 78, 79

(Liquefied Petroleum—Butane & Propane)

Cities Service Oil Co.
Bartlesville, Okla.

Phillips Petroleum Co.
Special Products Division
Bartlesville, Okla.
FEderal 6-6600

See Page 19

(Methylene Chloride)

American Mineral Spirits Co.
Mountain Avenue
Murray Hill, N. J.
CRestview 3-0700

Diamond Alkali Co.
925 Euclid Avenue
Cleveland 14, Ohio
MAin 1-6100

Dow Chemical Co.
Midland, Mich.
MElrose 6-1000

E. I. du Pont de Nemours & Co.
Electro Chemicals Dept.
Wilmington 98, Del.
OLympia 4-5121

General Chemical Division
Allied Chemical Corp.
40 Rector Street
New York 6, N. Y.
HAnover 2-7300

See Pages 91, 136

Kolker Chemical Corp.
600 Doremus Avenue
Newark 5, N. J.
MArket 2-4085

Stauffer Chemical Co.
380 Madison Avenue
New York 17, N. Y.
OXford 7-0600

(Nitrogen)

Air Reduction Co., Inc.
150 East 42nd Street
New York 17, N. Y.
MUrray Hill 2-6700

See Page 23

Linde Co. Division
Union Carbide Corp.
30 East 42nd Street
New York 17, N. Y.
MUrray Hill 7-8000

Liquid Carbonic Division
General Dynamics Corp.
4400 West 45th Street
Chicago 32, Ill.
FI 6-8181

National Cylinder Gas Division
Chemetron Corp.
1200 N. Claremont Avenue
Chicago 22, Ill.
HUmboldt 6-1462

Ohio Chemical & Surgical Equipment Co.
Division, Air Reduction Co.
1400 E. Washington Avenue
Madison 10, Wisc.

See Page 23

(Soluble Gases—including Nitrous Oxide, Carbon Dioxide and CO_2-N_2O Mixtures)

Pure Carbonic Co. Division
Air Reduction Co., Inc.
150 East 42nd Street
New York 17, N. Y.
MUrray Hill 2-6700

Liquid Carbonic Division
General Dynamics Corp.
4400 West 45th Street
Chicago 32, Ill.
FI 6-8181

National Cylinder Gas Division
Chemetron Corp.
1200 N. Claremont Avenue
Chicago 22, Ill.
HUmboldt 6-1462

Ohio Chemical & Surgical Equipment Co.
Division, Air Reduction Co.
1400 E. Washington Avenue
Madison 10, Wisc.

See Page 23

Standard Air Co.
335 Paterson Plank Road
Carlstadt, N. J.
GEneva 8-5449

S. S. White Dental Mfg. Co.
211 S. 12th Street
Philadelphia 5, Pa.
WAlnut 3-1621

See Page 138

SHELLAC

Acme Shellac Products Co.
108 Blanchard Street
Newark 5, N. J.
MArket 3-7707

Bradshaw Praeger & Co.
3248 West 47th Place
Chicago 32, Ill.
LAfayette 3-2050

Gillespie-Rogers-Pyatt Co.
75 West Street
New York 6, N. Y.
WHitehall 3-9740

Mac-Lac Co. Division
Mantrose Corp.
99 Park Avenue
New York 16, N. Y.
MUrray Hill 7-2762

F. H. Paul & Stein Brothers
235 5th Avenue
New York, N. Y.
MUrray Hill 4-6370

William Zinsser & Co.
516 West 59th Street
New York 19, N. Y.
COlumbus 5-2800

SILICONES

Dow, Corning Corp.
Midland, Mich.
TEmple 2-2371

See Page 16

General Electric Co.
Silicone Products Dept.
Waterford, N. Y.
ADams 8-3330

Union Carbide Corp.
Silicones Division
270 Park Avenue
New York 17, N. Y.
LL 1-2345

STARCH CONCENTRATE

Polyvinyl Chemicals, Inc.
26-15 Howley Street
Peabody, Mass.

National Starch & Chemical Corp.
Resin Division
750 Third Avenue
New York 17, N. Y.

TRICHLOROETHANE

American Mineral Spirits Co.
Mountain Avenue
Murray Hill, N. J.
CRestview 3-0700

Dow Chemical Co.
Midland, Mich.
MElrose 6-1000

Merchants Chemical Co.
60 East 42nd Street
New York, N. Y.
MUrray Hill 2-8712

Union Carbide Chemicals Co. Division
Union Carbide Corp.
30 East 42nd Street
New York 17, N. Y.
MUrray Hill 7-8000

See Pages 78, 79

MISCELLANEOUS RAW MATERIALS

(Agitating Balls for Paints and Powders)

Sterling Commercial Steel Ball Corp.
Box 401
Sterling, Ill.
MA 5-2750

(Anhydrous Alcohol)

Commercial Solvents Corp.
260 Madison Avenue
New York 17, N. Y.
LExington 2-6420

Enjay Co. Division
Humble Oil & Refining Co.
15 West 51st Street
New York 19, N. Y.

See Page 26

U. S. Industrial Chemicals Co. Division
National Distillers and Chemical Corp.
99 Park Avenue
New York 16, N. Y.
OXford 7-0700

See Page 110

(Antioxidants and Bacteriostats)

Catalin Corporation of America
One Park Avenue
New York 16, N. Y.
MUrray Hill 3-2100

R. T. Vanderbilt & Co.
230 Park Avenue
New York 17, N. Y.
(Vancide)

(Foam Stabilizers)

Kessler Chemical Co.
State Road and Cottam Avenue
DE 2-6515
Philadelphia 35, Pa.

S. B. Penick & Co.
100 Church Street
New York, N. Y.
COrtland 7-1970

See Page 105

Ultra Chemical Works Division
Witco Chemical Co.
2 Wood Street
Paterson, N. J.
ARmory 4-0100

(Pharmaceuticals—Antibiotics)

Ciba Pharmaceutical Products
Summit, N. J.

Commercial Solvents Corp.
260 Madison Avenue
New York 16, N. Y.

Lederle Laboratories Division
American Cyanamid Co.
Pearl River, N. Y.

Eli Lilly & Co.
740 S. Alabama Street
Indianapolis 6, Ind.

Merck & Co.
Rahway, N. J.
RAhway 7-1200

S. B. Penick & Co.
N. Y. Quinine Division
100 Church Street
New York 8, N. Y.
CO 7-1970

See Page 105

Chas. Pfizer & Co.
Chemical Sales Division
630 Flushing Avenue
Brooklyn 6, N. Y.
EVergreen 8-3800

Wallerstein Co.
Wallerstein Square
Mariner's Harbor
Staten Island 3, N. Y.

(Quaternary Ammonium Compounds)

Commercial Solvents Corp.
260 Madison Avenue
New York 16, N. Y.

General Aniline & Film Corp.
Antara Chemicals Division
435 Hudson Street
New York 14, N. Y.

See Page 27

Miranol Chemical Co.
277 Coit Street
Irvington, N. J.

Onyx Oil & Chemical Co.
190 Warren Street
Jersey City 2, N. J.
HEnderson 4-1700

Rohm & Haas Co.
222 Washington Street
Philadelphia 5, Pa.
LOcust 3-9860

See Page 15

Sterwin Chemicals, Inc.
1450 Broadway
New York 18, N. Y.
LAckawanna 4-6400

(Snow Pellets)

Baltic Chemical Co.
115-119 Fourth Avenue
Brooklyn 17, N. Y.
NEvins 8-6401

(Thickening Agents)

American Cyanamid Co.
30 Rockefeller Plaza
New York 20, N. Y.
CIrcle 7-0100

B. F. Goodrich Chemical Co.
3135 Euclid Avenue
Cleveland 15, O.
Utah 1-8200

Kessler Chemical Co.
State Road and Cottam Avenue
Philadelphia 35, Pa.
DE 2-6565

S. B. Penick & Co.
100 Church Street
New York, N. Y.
COrtland 7-1970

See Page 105

R. T. Vanderbilt Co.
230 Park Avenue
New York 17, N. Y.
(Veegum)

VALVES, AEROSOL (General Purpose)

Aerosol Research Co.
743 S. Circle Avenue
Forest Park, Ill.
FOrest 6-4880

See Page 3

Clayton Corp.
4205 Forest Park Boulevard
St. Louis 8, Mo.
JEfferson 5-6226

See Page 64

Emson Research, Inc.
22 Burr Court
Bridgeport, Conn.
EDison 6-2553

See Page 132

Maruichi Manufacturing Co.
2246 Nishisugamo 2-chome
Toshimia-Ku
Tokyo, Japan

See Page 138

Newman-Green, Inc.
507 Interstate Road
Addison, Ill.
TErrace 2-1000

See Page 25

Oil Equipment Laboratories, Inc.
600 Pearl Street
Elizabeth, N. J.
ELizabeth 4-3900

Precision Valve Corp.
700 Nepperhan Avenue
Yonkers 3, N. Y.
YOnkers 9-6500

See Page 34

Risdon Manufacturing Co.
Naugatuck, Conn.
PArk 9-8231

A. Schrader's Son
Div. Scovill Mfg. Co., Inc.
470 Vanderbilt Avenue
Brooklyn, N. Y.
NEvins 8-4000

See Page 6

Seaquist Manufacturing Corp.
First Street
Cary, Ill.
MEcury 9-7533

Uni-Valve Corp.
9947 Franklin Avenue
Franklin Park, Ill.
GLadstone 1-0046

Valve Corporation of America
1720 Fairfield Avenue
Bridgeport, Conn.
EDison 3-3165

See Page 10

VALVES, AEROSOL (Foam)

Aerated Container Corp.
Dairy Whipt Division
39 So. LaSalle Street
Chicago, Ill.
CEntral 6-7460

See Page 30

Aerosol Research Co.
743 S. Circle Avenue
Forest Park, Ill.
FOrest 6-4880

See Page 3

Emson Research, Inc.
22 Burr Court
Bridgeport, Conn.
EDison 6-2553

See Page 132

Clayton Corp.
4205 Forest Park Boulevard
St. Louis 8, Mo.
JEfferson 5-6226

See Page 64

Newman-Green, Inc.
507 Interstate Road
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TErrace 2-1000

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600 Pearl Street
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Precision Valve Corp.
700 Nepperhan Avenue
Yonkers 3, N. Y.
YOnkers 9-6500

See Page 34

Risdon Manufacturing Co.
Naugatuck, Conn.
PArk 9-8231

Seaquist Manufacturing Corp.
First Street
Cary, Ill.
MErcury 9-7533

Super Whip Valve Co.
4101 N. Rockwell Street
Chicago 18, Ill.
JUniper 8-6300

Valve Corp. of America
1720 Fairfield Avenue
Bridgeport, Conn.
EDison 3-3165

See Page 10

VALVES, AEROSOL (Food)

Aerated Container Corp.
Dairy Whipt Division
39 So. LaSalle Street
Chicago, Ill.
CEntral 6-7460

See Page 30

Clayton Corp.
4205 Forest Park Boulevard
St. Louis 8, Mo.
JEfferson 5-6226

See Page 64

Oil Equipment Laboratories, Inc.
600 Pearl Street
Elizabeth, N. J.
ELizabeth 4-3900

Precision Valve Corp.
700 Nepperhan Avenue
Yonkers 3, N. Y.
YOnkers 9-6500

See Page 34

Risdon Manufacturing Co.
Naugatuck, Conn.
PArk 9-8231

Super Whip Valve Co.
4101 N. Rockwell Street
Chicago 18, Ill.
JUniper 8-6300

VALVES, AEROSOL (Glass and Plastic Bottle)

Aerosol Research Co.
743 S. Circle Avenue
Forest Park, Ill.
FOrest 6-4880

See Page 3

Emson Research, Inc.
22 Burr Court
Bridgeport, Conn.
EDison 6-2553

See Page 132

Newman-Green, Inc.
501 Interstate Road
Addison, Ill.
TErrace 2-1000

See Page 25

Precision Valve Corp.
700 Nepperhan Avenue
Yonkers 3, N. Y.
YOnkers 9-6500

See Page 34

Risdon Manufacturing Co.
Naugatuck, Conn.
PArk 9-8231

Valve Corp. of America
1720 Fairfield Avenue
Bridgeport, Conn.
EDison 3-3165

See Page 10

VALVES, AEROSOL (Mechanical Break-Up)

Aerosol Research Co.
743 S. Circle Avenue
Forest Park, Ill.
FOrest 6-4880

See Page 3

Emson Research, Inc.
22 Burr Court
Bridgeport, Conn.
EDison 6-2553

See Page 132

Newman-Green, Inc.
501 Interstate Road
Addison, Ill.
TErrace 2-1000

See Page 25

Precision Valve Corp.
700 Nepperhan Avenue
Yonkers 3, N. Y.
YOnkers 9-6500

See Page 34

Risdon Manufacturing Co.
Box 520
Naugatuck, Conn.
PArk 9-8231

Valve Corp. of America
1720 Fairfield Avenue
Bridgeport, Conn.
EDison 3-3165

See Page 10

VALVES, AEROSOL (Metered)

Dill Manufacturing Co.
700 East 82nd Street
Cleveland, O.
UTah 1-3200

Emson Research, Inc.
22 Burr Court
Bridgeport, Conn.
EDison 6-2553

See Page 132

Hampton Products Co.
Hestor Street
Portland, Pa.
TWin Oaks 7-6103

Newman-Green, Inc.
507 Interstate Road
Addison, Ill.
TErrace 2-1000

See Page 25

Precision Valve Corp.
700 Nepperhan Avenue
Yonkers 3, N. Y.
YOnkers 9-6500

See Page 34

Risdon Manufacturing Co.
Box 520
Naugatuck, Conn.
PArk 9-8231

Valve Corp. of America
1720 Fairfield Avenue
Bridgeport, Conn.
EDison 3-3165

See Page 10

VALVES, AEROSOL (Paint)

Aerosol Research Co.
743 S. Circle Avenue
Forest Park, Ill.
FOrest 6-4880

See Page 3

Emson Research, Inc.
22 Burr Court
Bridgeport, Conn.
EDison 6-2553

See Page 132

Maruichi Manufacturing Co.
2246 Nishisugamo 2-chome
Toshima-Ku
Tokyo, Japan

See Page 138

Newman-Green, Inc.
507 Interstate Road
Addison, Ill.
TErrace 2-1000

See Page 25

Oil Equipment Laboratories, Inc.
600 Pearl Street
Elizabeth, N. J.
ELizabeth 4-3900

Precision Valve Corp.
700 Nepperhan Avenue
Yonkers 3, N. Y.
YOnkers 9-6500

See Page 34

Risdon Manufacturing Co.
Box 520
Naugatuck, Conn.
PArk 9-8231

Seaquist Manufacturing Corp.
First Street
Cary, Ill.
MEcury 9-7533

Sprayon Products Co.
2075 East 65th Street
Cleveland, O.

See Page 146

Uni-Valve Corp.
9947 Franklin Avenue
Franklin Park, Ill.
GLadstone 1-0046

Valve Corp. of America
1720 Fairfield Avenue
Bridgeport, Conn.
EDison 3-3165

See Page 10

VALVES, AEROSOL (One-Shot)

Clayton Corp.
4205 Forest Park Boulevard
St. Louis 8, Mo.
JEfferson 5-6226

See Page 64

Oil Equipment Laboratories, Inc.
600 Pearl Street
Elizabeth, N. J.
ELizabeth 4-3900

A. Schrader's Son
Div. Scovill Mfg. Co., Inc.
470 Vanderbilt Avenue
Brooklyn, N. Y.
NEvins 8-4000

See Page 6

VALVES, AEROSOL (Ultrafine Particle Size)

Aeroprojects, Inc.
310 East Rosedale Avenue
West Chester, Pa.
OWen 6-4710

Thomas J. Mahon, Inc.
75 Brayton Street
Englewood Cliffs, N. J.
LOwell 7-3900

VALVE GASKETS (Rubber)

The Ohio Rubber Co. Division
Eagle Picher Co.
Willoughby, Ohio

See Page 118

VALVE MOUNTING CUPS (With Flowed Gaskets)

Bernardin Bottle Cap Co.
2201 W. Maryland Street
Evansville, Ind.
HArrison 5-6221

Bristol Flowed Gasket Co.
P. O. Box 382
Southington, Conn.

Crown Cork & Seal Co.
Can Division
9300 Ashton Road
Philadelphia 36, Pa.
ORchard 3-5100

See Page 77

Dewey & Almy Chemical Division
W. R. Grace & Co.
62 Whittemore Avenue
Cambridge 40, Mass.

Handy Button Machine Co.
2255 S. Rockwell Street
Chicago 8, Ill.
BIshop 7-7400

Sterling Seal Co.
316 West 16th Street
Erie, Pa.
Glendale 4-1568

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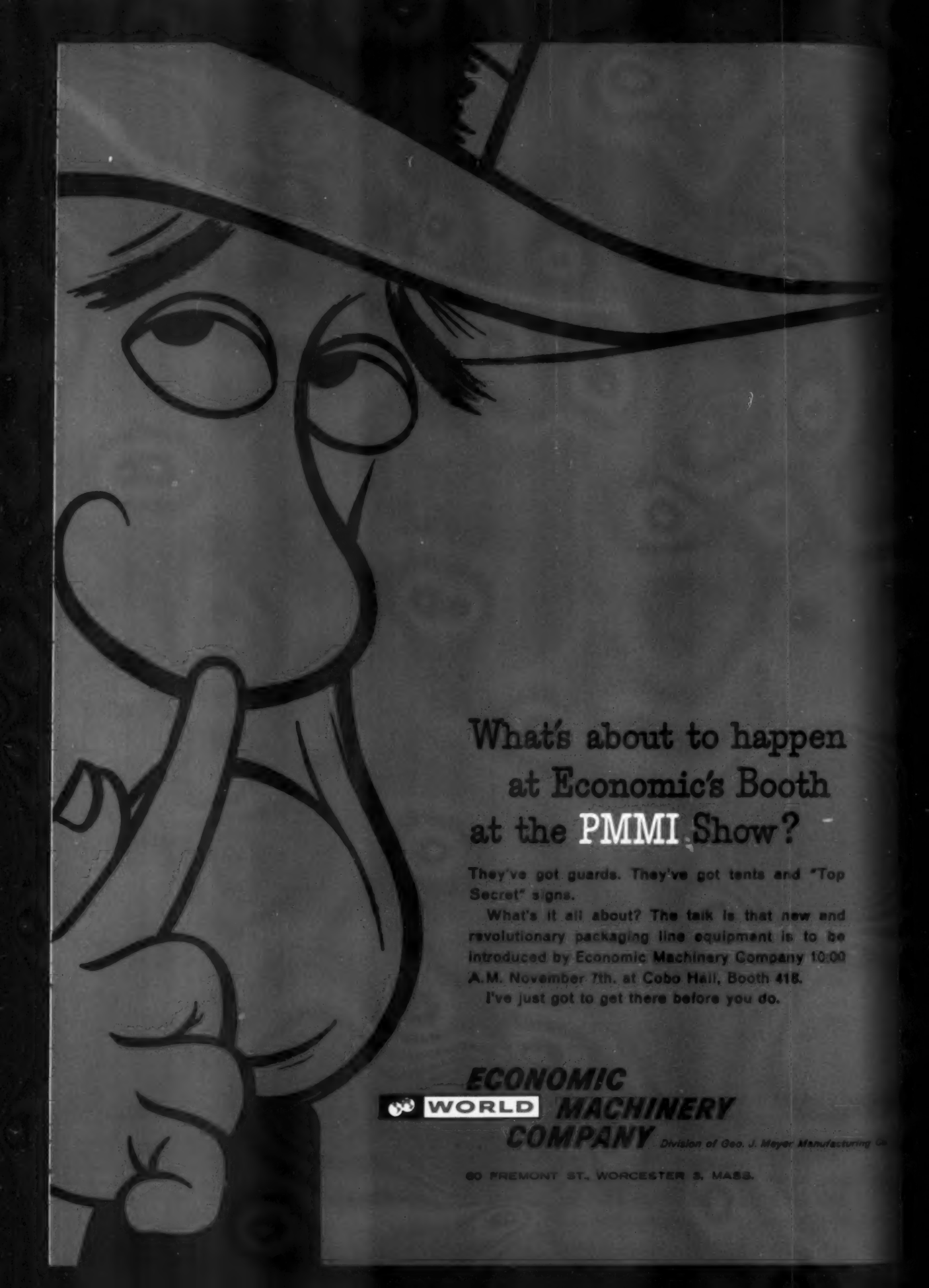
PEERLESS TUBE COMPANY Bloomfield, New Jersey



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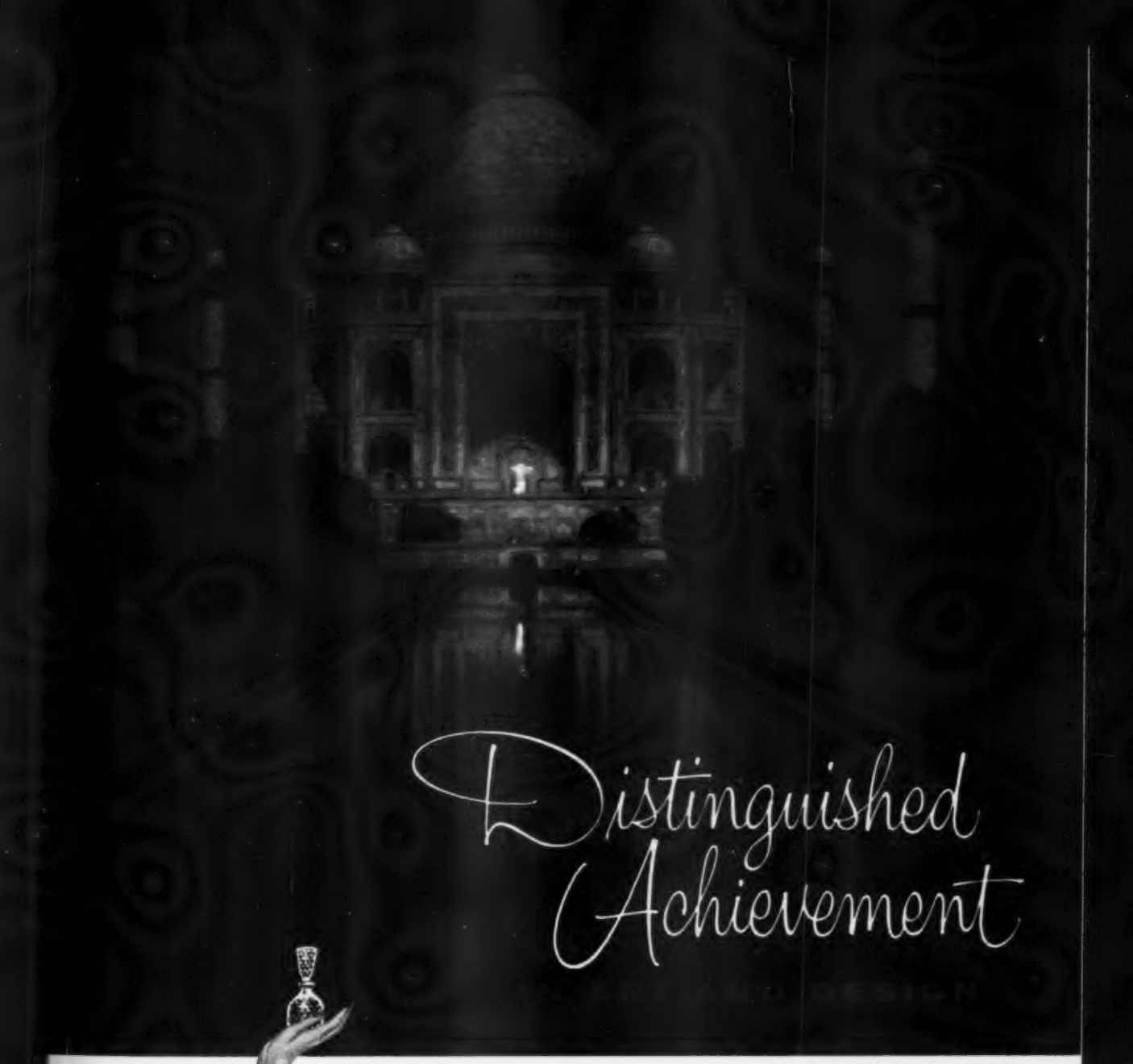

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EDITORIALS

The Measurable Shall Rule . . .

IN THESE days of crises in the United Nations, in Berlin, in Southeast Asia, one would think any alert aerosol executive would have his hands full just keeping abreast of the deteriorating international situation. But tacked on to these pressing political matters are some others in the business category which would indicate that the coming months also will be a time of crisis (on a much smaller scale) for the aerosol industry. Consider for a moment these three current problems:

1. A proposed regulation by the New York City Fire Department to ban the use of flammable propellants in aerosols sold in the city. Good legislative maneuvering by CSMA counsel and a special industry committee may well have staved off this regulation, but there is still the chance that industry proponents of the measure will keep the matter in the "threat" stage for some months.

2. Aerosol marketers do not seem concerned enough about the implications of the Federal Hazardous Substances Labeling Law, which goes into effect on Feb. 1. Neither the can makers, who lithograph the cans, nor the marketers themselves seem to have thought seriously about exactly how all these labels will be changed in time to meet the provisions of the law.

3. Strong indications by the state authorities in Pennsylvania, Ohio, and New York, that net weight or volume contents in an aerosol can will be checked carefully in the future. Already, there are reports that shipments of aerosols have been seized for short weight in Pennsylvania, and if this spreads to other states it could create a costly problem.

Because of the suddenness with which it came up, perhaps the third of these problems warrants special attention. In Pennsylvania, what the authorities are attempting to do is match the *delivered* contents of the aerosol can (in at least two disputed cases, shave creams) against the stated net declaration on the label. It is common knowledge in the aerosol industry that exactly how the product is expended — in short bursts or in one continuous actuation of the valve — directly determines *how much* product is delivered. Therefore it would appear to be categorically unfair to begin a measurement of what constitutes a fair measurement without consultation with the industry — a move apparently not considered necessary by the Pennsylvania authorities.

Aside from attempting to present the best possible case to the Pennsylvania authorities, there is probably little the individual aerosol marketer can do in such a situation. The CSMA is attempting to alleviate the situation with a declaration of its policy on net weight labeling, plus an approach to the National Conference of Weights and Measures with an offer to clarify the technical aspects.

But this problem brings the focus of attention on an area in which some aerosol marketers themselves admit not being overly strong: re-checking of extended shelf life (coupled with stock rotation for some formulations), plus a closer statistical analysis of deliverable product. In other words, the marketer will have to play closer attention to his responsibility of giving the consumer the value for which he is paying. If this involves replacing of shelf stock in the hands of the retailer two years ago (or more) then this will have one way of meeting this responsibility.★

A Public Hearing on Propellants . . .

Industry Views Conflict As New York Moves to Ban Flammable Propellants

THE aerosol industry was given its "innings" by the new York Fire Department at a public hearing held on Sept. 14 at the Municipal Building in Downtown Manhattan. Purpose of the hearing was to give the Chemical Specialties Manufacturers Association a chance to air its opposition to a ban on flammable propellants in aerosol hair sprays and paints issued by the Fire Department on June 20.

Although the CSMA's Aerosol Division was able to marshal a considerable body of evidence to support its contention that existing Interstate Commerce Commission and Federal Hazardous Substances Labeling Regulations offer sufficient protection to the consumer, the hearing was not conclusive. The CSMA *was* able to elicit a promise from the Fire Department not to enforce the disputed regulation pending further study by the research staff of the Fire Department.

The general tone of the CSMA's position on the matter was outlined by Charles Beach, vice-president and general manager of John C. Stalfort & Sons, Inc., Baltimore filler (and president of the CSMA): "As a trade association representing all segments of the aerosol industry the association does not take a position which would indicate a preference for the use of any of the various ingredients that are available to make up an aerosol product. The association does not suggest that its members prefer the so-called flammable gases as opposed to other types of propellants used in aerosol products. The association on behalf of its members in accordance with long-established policy does protest what its members feel to be unreasonable regulation of the industry. We do not understand the reasoning behind the prohibition of flammable gases as propellants in aerosols. On the basis of information available to the industry we believe that this regulation in its present form is not justified and should be modified in accordance with applicable test methods. We do recommend that aerosol products and all consumer products sold in New York City and elsewhere be labeled and regulated in a manner commensurate with the hazard presented by the product as packaged and sold for shipment, storage, and use."

Specifically, Mr. Beach proposed that the Fire Department adopt the test methods of the Interstate Commerce Commission and those adopted by the Department of Health, Education, and Welfare. He pointed out that these methods "have proved satisfactory for determining the hazard presented in the handling, storage, and use of aerosol products."

THE brunt of the CSMA presentation was borne by Montfort A. Johnsen, director of research of Peterson Filling and Packaging Co., Danville, Ill., who is a leading developer of formulations employing flammable propellants. Through use of charts, Mr. Johnsen demonstrated the basic workings of hydrocarbon-propelled window cleaners, shaving creams, insecticides, etc., and at one point attempted to ignite a hydrocarbon-propelled shave cream with a match to indicate that these formulations will not burn under normal conditions.

He explained that the hydrocarbons are used either to improve the product or reduce formula costs. "In a simulated snow aerosol, for instance, the solution deposited solid stearic acid below 65°F. and this caused the valve to clog. By the addition of 3% iso-butane to the formula, the aerosol continued to function properly down to about 53°F. The reason: iso-butane is a better solvent than fluorocarbons for stearic acid. The result: iso-butane is now being used in almost one-half the simulated snow aerosols now sold in the U.S."

Among other interesting technical facts presented by Mr. Johnsen were these:

1. Some present-day window cleaners use as little as a quar-

Theodore Heilig

Charles Beach

Montfort Johnsen

. . . one very much in favor, two against.

ter-ounce of hydrocarbon to dispense a pound of material.

2. The average shaving cream contains less than 3% hydrocarbon and may be regarded as being completely safe under all conditions of normal use.

3. Unpublished research indicates that replacement of 10% of the fluorocarbon propellant with iso-butane in insecticides increases their insecticidal potency by about 8%.

4. The high water content of many hydrocarbon-propelled formulations acts as a fire quencher. "Water," he said, "has been shown to be about twice as effective as the fluorocarbons in controlling the flammability of hydro-carbons when packaged in aerosol form."

5. The "vapor-tap" package breaks up the water into a fine mist by action of the iso-butane propellant, and the spray is "non-flammable" according to all test methods.

6. Some 85% of European aerosols contain hydrocarbons.

Mr. Johnsen then briefly outlined the Flame Projection, Tagliabue Open Cup, Open Drum, and Closed Drum Tests, pointing out that all judge the flammability hazard of the whole product, not of the separate ingredients.

As an example of an auxiliary test method used to support the evidence of the standard tests, he cited an oven cleaning spray. "The formula consisted of 95% special soap solution with 5% iso-butane propellant. After passing the standard tests, the product was sprayed into ovens of various sizes, fitted with pilot lights, or else with candles inserted and lit. The product was sprayed onto the top of stoves, with pilot light on —also with one or two gas burners on. The iso-butane content was purposedly doubled and these 'consumer use' tests were then repeated. The cans were tested after aging over night, and after having been freshly shaken. Various types of tests were made in extreme situations to insure that the product was (as some people say) 'idiot-proof'. After the hydrocarbon product satisfied us on all counts—it also did a good cleaning job on ovens—it was approved for submission to possible customers. The painstaking efforts that aerosol formulators take with products of this type show why the industry enjoys a good record in the field."

Obviously briefed in advance about the thinking of key Fire Dept. research personnel, Mr. Johnsen devoted considerable time to possible hazards of these materials within the home, in warehouses, and during shipment through congested areas.

"The types of hypothetical situations advanced in opposition to the use of hydrocarbons are almost inconceivable. Consider a situation where several large hydrocarbon-type aerosols are stored in an air-tight cabinet under the kitchen sink. Suddenly they all start leaking rapidly. A short while later the housewife arrived on the scene and opens the cabinet, lighted match in hand, to select one of the aerosols. The result would be a momentary flare-up, similar to that occurring when a gas-filled oven is ignited; but we also suggest that a situation of this type will not happen once in a millenium. To say that hydrocarbon aerosols are dangerous from causes such as this is the same as to claim that common table salt is dangerous because it can be made to evolve chlorine gas under electrolysis!

"How dangerous are hydrocarbon aerosols in household storage? Let us consider a large size can of pressurized starch, which requires about a half-ounce of iso-butane as the propellant. An air-tight enclosure of less than nine cubic feet would be needed to reach the lower explosive limit, providing all the hydrocarbon

escaped rapidly. About six cans of standard shaving creams would be needed to get the same result.

"Of far greater importance to the fire fighter is the warehouse storage situation. What about the possible build-up of flammable vapors in warehouses containing hydrocarbon aerosols? Recently the Colgate-Palmolive Co. made a painstaking study of this. A hydrocarbon sensitive "sniffer" was placed in the interior cases of a pallet load of hydrocarbon shave cream. The "sniffer" was connected to a machine which then gave the concentration of hydrocarbon gases inside these interior cases. In no instance was more than 1/500th of the lower explosive limit of hydrocarbon detected. This convinced Colgate that absolutely no hazard existed from container leakage.

"It is always possible to suggest that warehoused cans may develop leaks during storage because of faulty gaskets or similar reasons. However, given realistic sets of conditions, and assuming minimum amounts of air movement in the warehouse, it is possible to show mathematically that the chance of an explosion is still exceedingly remote. We feel that one of the dangers to the firemen might be caused, not by any failure of the aerosols, but by a warehouse fire that somehow gets started where aerosols are stored. Obviously no pressure-resistant container is to be considered safe when a fire is in the building, regardless of its contents. But interestingly enough, within the framework of *relative* safety, the hydrocarbon types come out pretty well.

"In a warehouse fire *any* aerosol heated to about 160°F. or higher will burst, regardless of the nature of its contents. Cans of non-aerosol products will also burst under similar conditions. The flashpoint of the contents will have absolutely no effect on the fire hazard since all burnable contents will be consumed, regardless of flashpoint, but the B.T.U. quantity of the contents will have an effect on the intensity of the fire. Most hydrocarbon type aerosols contain 90% to 95% water. These cans would heat up more slowly in a fire. When they burst the water would exert at least some benefit. The hydrocarbon would burn rapidly and be gone. Thus, the hydrocarbon type aerosols would be less dangerous than most, in a fire of this sort. Their B.T.U. content would be negligible.

"The last category is hazard during shipment. A truck carrying hydrocarbon aerosols would still have to leak at the rate of many pounds per minute to even begin to approach serious levels of gas concentration. There is a fast turnover of air even in closed trucks and this would be sufficient to carry out any fumes. Here again we have the extremely improbable case of cans being produced under watchful supervision, being stored in a warehouse for several days or weeks, and then starting to leak rapidly during shipment."

Although Mr. Johnsen was speaking as a representative of the CSMA's Aerosol Division, the aerosol industry did not present a united front on the subject of flammability. A Mr. Ross, identified as an attorney for Carter Products, Inc., marketer of "Rise" shaving cream (which is powered by fluorocarbons alone) said his company would like to submit data on the danger of hydrocarbon shave cream formulations. He said Carter markets shave cream but purposely doesn't package it with flammable propellants.

T. E. Heilig, president of Regal Chemical, Inc., Brooklyn filler, suggested that the most important danger of flammable propellants is large-scale leakage in the warehouse. He charged that the marketers and packagers take more precautions to protect their equipment and plant personnel than they do the public, warehousemen, retailers, and firemen.

Mr. Heilig quoted a Professor Parks, of Rhode Island State College, whom he identified as a leading authority on petrochemicals, as the prime source for his information on the dangers of flammable propellants. He said he has been convinced of the danger since early 1959, and later told *Soap & Chemical Specialties* that since then he has been alerting fire departments in New York and other cities as a "public service".

A spokesman for the Fire Department chided the industry for its constant reference to "normal use", which he said involves educating the public to use an aerosol properly. He said the Fire Dept. would still like data to give it information on:

1. Whether the product separates or whether it can be separated from the propellant?
2. If the product is stored, will it separate so that the product is on top?

In conclusion, the industry was advised that the disputed regulation will not be enforced until "due consideration" has been given to the information presented at the hearing.★

And Later . . .

Although Fire Department Deputy Chief Hartnett, who was in charge of the hearing, gave Regal's Heilig and Carter's Ross until Oct. 15 to present additional data, industry spokesman queried during the last week in September expressed confidence that CSMA data presented had a good chance of tipping the balance in their direction—The Editor.

The four-unit research center includes the Hazel-Atlas unit at Plainfield (inset), Central Research & Engineering (left foreground), General Packaging (right background), and Metal Division Research (far background).

Continental Can Unveils New Chicago Research Center

CONTINENTAL Can Co., New York, officially opened its recently completed $20 million packaging research complex in Chicago and in Plainfield, Ill. on Sept. 14. The center consolidates research activities for all but one of the company's product divisions in close proximity to each other and to the long-range research operation at Central Research and Engineering.

Newly operating in the Technical Center are the General Packaging Research and Development Laboratory, located next to Continental's previously established Metal Research and Development and Central Research and Engineering facilities, and the Glass Research and Development Laboratory, an hour's distance away in Plainfield, Ill.

By expanding and centralizing its scientific research facilities, the company obviously plans to take advantage of the intellectual stimulation and cross-fertilization of ideas generated by the gathering together of some 800 scientists and technicians. In brief, the four integral units of the research complex consist of:

The Corrosivity Tester is used to quickly determine the approximate shelf life of a filled container. This information is utilized in developing can enamels and coatings.

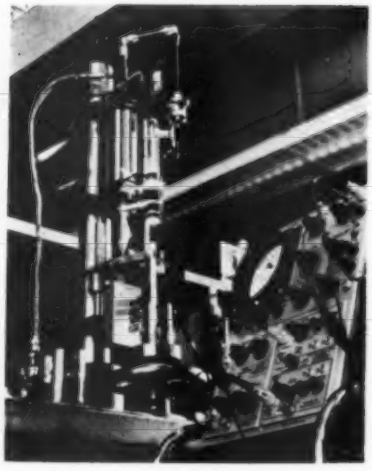
1. The Metal Division Research and Development Department — which consists of more than 260,000 square feet of floor space made up of completely equipped chemical, physical, bacteriological, and packaging laboratories—as well as laboratories for container design, evaluation and specifications, plate and protective coatings, can forming and sealing.

2. The new General Packaging Research and Development Laboratory, 145,000 square feet in a new building combining the talents of the six of the company's divisions: Bondware (paper container); Corrugated Container; Flexible Packaging; Folding Carton and Fibre Drum; Plastic Bottle and Tube; and White Cap and Bond Crown (closures).

3. Central Research and En-

Continental's Metal R & D was responsible for the first low-pressure aerosol container, and for the techniques involved in pressure-packing insecticides, and paints. Here, a laboratory test pack is being made of aerosol foods.

An optical device is being used by this Metal R & D technician to inspect the double seam of a soft drink can. By magnifying a section of the seam, this instrument provides a means for accurately measuring the relationship between the can body and end.



Recently completed by Hazel-Atlas engineers, this inspection device is currently being tested at the Plainfield laboratory. It measures the thickness variations in glass to 5/1000 of an inch by utilizing a photoelectric scanner. Hopes are that someday it can be adapted to measure thickness variations in hot glass before the container enters the annealing lehr.

gineering is a unique establishment devoted to basic research and development and discovery of proper applications for radically new materials, methods, equipment and products. 75 scientists, working in an area of 78,000 square feet, investigate such problems as thickness variations in glass and tinplate, coating of metal by vacuum deposition, etc.

4. In Plainfield, Ill., an hour's drive from the other three grouped buildings, is the Glass Research and Development Laboratory, located near the newest of the company's Hazel-Atlas Division glass container plant. This new 70,000-square-foot laboratory consolidates packaging engineering for customer research, glass research, and equipment development.

Obviously, the most immediate interest to the aerosol packager is the first and largest of the four research units—Metal Research and Development — where currently the largest single research effort is devoted to development of lightweight tinplate containers. Although the major work is being done to develop the new 60-pound tinplate for carbonated beverages (several brewers have already switched to the lighter material for 12-ounce cans) Continental Can researchers admitted that experiments have also been conducted to make use of the tinplate for aerosol cans. They report that early test cans were watched carefully for distortion of the sidewall (through internal pressures) but that most weaknesses appeared to center around the "blowing off" of the can ends. It was sug-

(*Continued on Page* 145)

THE SAMPLE SHELF

By Jerome N. Michell
vice president
The Walter Frank Organization
Hillside, Ill.

SINCE the beginning of 1961, we have pointed out various well designed and poorly designed aerosol packages, hoping that the intended constructive comments would be stimulants to those aerosol marketers who lack adequate design counsel within their companies, and who, generally have not had or sought professional help.

The fact that some of the bad examples were of labels of big companies was pure chance—proving only that BIG companies also make mistakes. Sometimes these mistakes are deliberate, and are used as market research guideposts and controls. Sometimes they are accidental, and are soon corrected.

But many times the design fault is perpetuated by the stumbling blocks of fear and indecision. This happens quite often when teams representing design, advertising, and sales, for example, get to together to discuss new design. We find that no-one really likes to go out on some real or imagined limb, because he might be wrong—and why should *he* take the blame?

If a product is going fairly well—why should the sales department push for a change—until competition forces it to?

If a product is a new one, why should the advertising department stick its neck out for a particular design and be blamed if the package doesn't click?

Those of us in design are probably more willing to fight for the design we feel is best—but even then the compromises creep in and the ultimate result is something less than we had planned. Often the indecision winds up in market research, everyone gladly willing to let someone else hold the bag for a possible mistake.

And that is the point of this month's column.

What's wrong with making a mistake in designing a package? Actually, the perfect package or package design is an unreachable, but necessary vision. There is no package design that cannot be improved—even the one just approved and applauded and not yet on the market.

We must keep trying to improve. Thousands of brands are hastily conceived and poorly executed in their original form and design—and have stayed right there. Many times lack of competition, poor sales, shortage of money, or other invalid reasons are the cause. Given a product that is of good quality and for which there is a need, even if competition isn't forcing a needed design change, sales would undoubtedly improve considerably with better consumer appeal, recognition and identity of the package.

If sales are poor and the marketer feels the product is dead or dying, perhaps an improvement in design appeal would help —at least it ought to be carefully considered as one aspect that can be changed inexpensively.

Good design need not be costly. If there are reasons why some design projects cost many thousands of dollars, there are also reasons why smaller, individual designs should not cost more than a few hundred dollars.

The editors of *Aerosol Age* have concurred with the suggestion that a design critique panel be set up on a trial basis for any aerosol product which the marketer wishes to have judged.

The Walter Frank Organization will handle all of the details of this program, but will act only as one of a panel of design experts both to insure fairness and reliability, and to avoid any implication of profit seeking!

The box gives the details of this program—and we reserve the right to cancel at any time if too much (or too little) interest is indicated.

And that's really sticking our neck out! ☆

WANT YOUR AEROSOL PACKAGE JUDGED?

1. **Send one complete package of each size aerosol product to**
   Aerosol Age Design Panel
   c/o Walter Frank Organization
   4100 Warren Avenue
   Hillside, Illinois
2. **Since it may not be possible to judge all entries, the panel will in general have to select those which best exemplify specific design problems.**
3. **Comments on the design of any package will be the personal opinions of the members of the panel, and will not necessarily reflect the opinions of any member of the Aerosol Age staff.**
4. **Because of handling problems, no entries can be returned.**

Fluorocarbon-Hydrocarbon Mixtures Offered by Union Carbide

A MAJOR change in policy among aerosol propellant manufacturers was signalled last month by an announcement from Union Carbide Chemicals Co., New York, that it will henceforth offer *blends* of fluorocarbons and other propellants. Since the beginnings of the aerosol industry, this is the first time a supplier of fluorinated hydrocarbons has seen fit to offer blends of the fluorocarbons and other propellants heretofore considered rivals of the fluorocarbons.

Initially, Union Carbide will offer two special propellant blends—a so-called "medium pressure" mixture of fluorocarbons and iso-butane, and a "high pressure" mixture of dimethyl ether and fluorocarbons. Also added to the propellant line is nitrogen, a compressed gas propellant previously available from Union Carbide only through its Linde Division, a separate corporate entity.

The high-pressure mixture, called "Ucon Paint Propellant," is made up of 75% propellant 12, 10% propellant 11, and 15% dimethyl ether. It is said to have superior solubility.

According to Thomas Hartley, sales manager for Ucon propellants, propellant blends will be offered as a "package" to the aerosol filler, thus doing away with the necessity that the filler mix them himself. They will also offer possible economies in that the filler will be able to use less propellant (for paint and certain other products) at the same time providing him with a real flexibility of formulation. Mr. Hartley suggests that the inclusion of dimethyl ether will, because of the increased paint solvency, enable the packager to package a paint product with up to 7% less propellant to do the same job.

"This new program," he reported, "is the culmination of several years of study and developmental work. In effect, it means we have broken out of a traditional one-propellant framework to offer the nearest thing to a complete line now available. Not only sales, but technical service back-up will permit us to recommend the single best propellant for a specific job."

Mr. Hartley points out that the name "Ucon Power Propellants" will supplant the old "Ucon Propellants" phraseology, which has come to mean fluorocarbons to most aerosol packagers. He hinted that the new name indicates a future versatility that will enable Union Carbide to offer new propellants almost as soon as they are developed.

Union Carbide is not new to the hydrocarbon field. A separately owned subsidiary, Pyrofax Corp., is a leading supplier of propane and butane for home heating and industrial users. Its Linde Co. Division is described as one of the oldest and largest in the compressed gas field.

Mr. Hartley emphasized the technical service idea. "The aerosol packager will be able to get all his hydrocarbon and fluorocarbon technical information from one source. This will apply to produce service, engineering service (for propellant storage and line installation) and such other important information as container compatibility and even valve performance."★

Complete kit consists of aerosol container, squeeze bottle, curlers, and directions. In later version, leaflet will be replaced by instruction booklet and front of outer package will be slightly changed.

P&G Test Markets "Lilt" in New Package

"PUSH Button Lilt," first aerosol home permanent to hit the consumer market, last month was being test marketed in a brand new package.

The new container is an attractive one-piece lithographed aluminum unit supplied by Peerless Tube Co., Bloomfield, N. J. Equipped with a non-metallic Precision valve fitted with a special comb applicator developed by P & G's own package designers, the container will hold 3.5 fluid ounces of the foam product. It is actually part of a three-component "kit" retailing at $2.49. The kit includes the push-button waving foam, a trim plastic squeeze bottle holding the liquid neutralizer, a package of end papers, and a packet of directions. The whole thing is packaged in an oval fiber can with a clear plastic top.

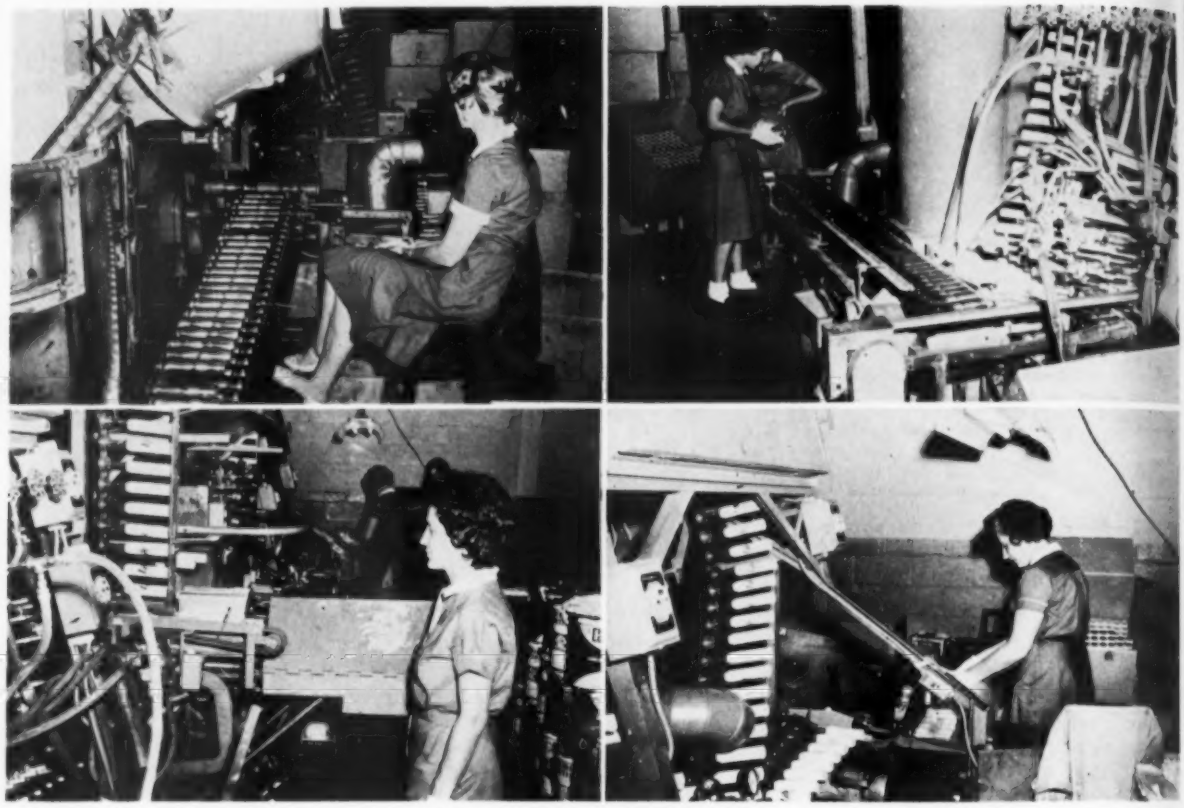
When first introduced early last year, the advertising fanfare and the novelty of the product attracted a good deal of attention from the aerosol industry. It hit the consumer market shortly after the introduction of a professional waving lotion and neutralizer in aerosol form by Caryl Richards, New York. Sold entirely to professional beauty shops, the Caryl Richards product has used a Peerless one-piece aluminum container since its introduction.

Possibly because of the intense competition in the home permanent field, Procter & Gamble has released very little information on "Lilt." In fact, the only general information on the formulation ever released to the trade press indicated that the waving foam is made possible by the "liquid layer of special emolient oils between vapor and product," which produces a quick-breaking foam which disappears a few seconds after the foam is applied.

Peerless Tube has suggested two factors which may have been important in selection of their "Peerasol." (1) the aluminum container's 1½-inch-diameter makes it easier to handle for a feminine hand. (2) The savings in weight will be reflected in lower freight costs.

John Palmer, Peerless Tube vice-president, suggested still another factor. He said aluminum container fab-

how the new "Lilt" container is made . . .



Top: Container bodies have just come from impact extruder and are on way to have neck fabricated and finished. Right: Finished cans are fed onto spindles for base coat application (at right).

Bottom: After base coat is dried in oven, cans are lithographed and then go through another oven before coming to end of line. Final step involves visual examination and cartoning by white-gloved operator.

ricating techniques provide close valve-opening tolerances—and hence less rejects for improperly crimped containers—than do glass container fabrication methods. He reported that Peerless is able to hold neck diameter tolerances of +.004 to —.003", rejecting containers not meeting these specifications. This stringently-maintained quality, he said, likely accounts for adoption of this type of container.

William Remington, assistant to the president at Peerless, told *Aerosol Age* that aesthetic appeal of the new package might also be a factor. He said that aluminum has a surface especially suited to receive decorative coatings and lithography. The new "Lilt" container uses a pretty pink base coat with magenta printing.

It is being fabricated on Peerless' new automatic aluminum production line which takes a precut slug and stamps out the can body on a Clearing impact extrusion press with 75 tons pressure at point of impact. A trimmer then shears the sidewall to correct length and a rolling machine turns the neck inward—so that the lip touches the inside of the neck to form a continuous interior circumferential bead. With sealing compound the cup-shaped top is inserted so it interlocks the beaded curl and ends in a flange around the outside of the container neck. From the fabrication line the containers pass through a trichloroethylene washing tank so they will be free of lubricants for exterior coatings.

The decoration operation begins when the containers are placed on individual spindles. After the pink base coat is sprayed on, they are carried through a drying oven and then carefully positioned for lithography on a Rutherford offset press. Another oven dries the final decoration, after which they are inspected and then boxed for shipment to the customer.

The aluminum container, which incidentally uses no interior coating, has been tested in the P&G laboratory for two years. Seemingly aware of the aerosol research being carried on by its competitors (Toni and Richard Hudnut are among the marketers of home permanents reported to be actively studying the aerosol package) P&G seems intent on holding onto and improving its strong market position.★

offers

TAMPER PROOF VALVE SEAL*

for Aerosol Cans

- Guards against sampling
- Easily torn off for use
- Cannot be repositioned
- Assures full content
- Is transparent
- Used with conventional cap
- Low in price

* patent pending

PLASTIC COVER CAPS

a complete line for uncoated aerosol bottles

In plain tops for labelling, —"bulls eye" tops where labelling is not desired, and customized versions.

Caps pictured in gold, colors and sparkle effects. Left to right: 1 oz.; 1½ oz. regular; 1½ oz. tall; 2 oz. and 3 oz. sizes.

CEnter 3-7311

PHARMAPLASTICS, inc. 205 S. Smallwood St., Baltimore 23, Md.

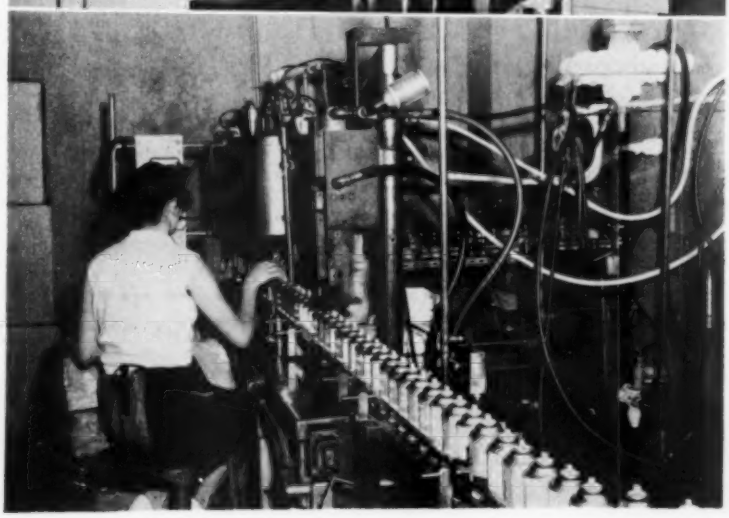
Composite (two-exposure) photograph of the new plant. Front of building consists of laboratory (left half) and offices. Raised area to rear is devoted to filling rooms, warehouse, and product mixing, with propellant storage in lower structure to left of first pole.

New Sun-Lac Plant Goes Into Full Operation

A BIG NEW filling plant, plus an increased sales and research staff, were unveiled by Sun-Lac, Inc., Clark, N. J. custom filler last month. The new plant, into which Sun-Lac moved less than a year ago, was recently completed with the final construction of warehousing and mixing areas.

The plant comprises a total of 32,000 square feet, almost twice the area Sun-Lac occupied last year in the industrial area of Newark. It is located in a suburban industrial complex in Clark which includes several cosmetic and pharmaceutical marketers.

As with every aerosol plant, the area of chief interest is the filling area. In the Sun-Lac plant the filling area is divided into five separate rooms, each with side walls extending



Top: expanded laboratory facilities and staff are under direction of Salvatore Noto (left foreground).

Below: one of two lines currently in operation is this cold filling unit.

THE FIRST FAMILY OF AEROSOL CANS
bears the name Crown

Name the product you want to put in aerosol cans and Crown has the ideal container for your purpose.

For sensitive products or products that are hard to hold under high pressure, the Crown Spra-Tainers are the *only* seamless aerosol cans on the market. For other products, Crown produces the conventional fabricated aerosol can. Capacities are 6, 8, 12, 14, or 16 ounces.

Crown is the originator of the disposable aerosol can . . . the largest manufacturer of aerosol cans . . . with the widest variety of aerosol cans.

YOUR PACKAGING DESERVES CROWN QUALITY

cans • crowns • closures • machinery

CROWN CORK & SEAL CO., INC.

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NOW...

FROM A SINGLE SOURCE

...the most complete line of aerosol propellants available anywhere

FLUOROCARBONS • HYDROCARBONS NITROGEN • SPECIALTY BLENDS

ALL FROM

UNION CARBIDE CHEMICALS

UCON® Power Propellants: Fluorocarbons 11, 12, 22, 113, 114; Propane; Isobutane; Nitrogen; Specialty Blends for specific applications.

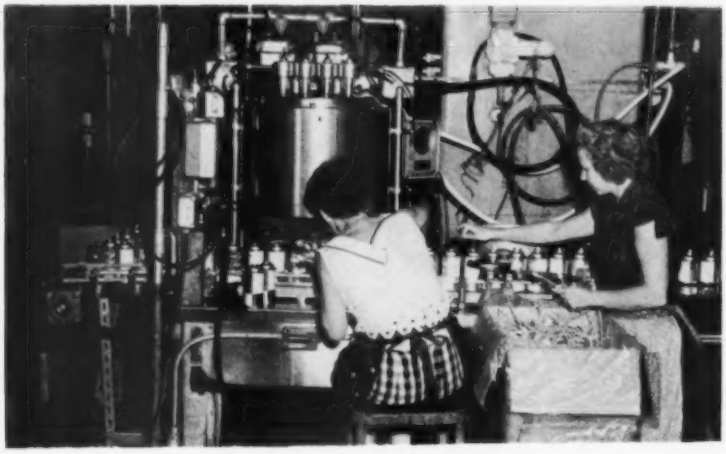
COMPREHENSIVE PROPELLANT PROGRAMMING at last becomes a reality with UNION CARBIDE'S introduction of the MOST COMPLETE LINE of power propellants, job-matched for every application.

- **One-Stop-Shopping, for purchasing ease and speed.**
- **Impartial, expert technical advice not influenced by a limited line.**
- **Complete engineering service including information on the storage and handling of all UCON power propellants.**
- **Customer service to help you build sales.**

There's much more that your UCON power propellants representative can tell you about UNION CARBIDE'S comprehensive propellant programming. Call him today. Union Carbide Chemicals Company, Division of Union Carbide Corporation, 270 Park Avenue, New York 17, New York.

Ucon®

POWER PROPELLANTS



Sun-Lac's pressure filling line is shown in use for a hair spray product. Much of equipment was built in the company's own tool shop.

up to the ceiling. The uniqueness of this plant lies in the fact that each filling room has an attached mixing room, its own blowing system, and its own explosion-proof wiring. Daniel Rubinfeld, president of the company, points out that this enables the firm to fill cosmetics and insecticides in adjoining filling rooms with no chance of cross contamination due to odors or solvents. Stainless steel kettles, hooked up to the production lines by piping, are supplied in each mixing room so there is no possibility of misdirecting ingredients from one operation to another.

Although there is room for five separate lines, Sun-Lac is currently operating one pressure and one cold fill unit at full production, with installation nearly complete on a third line slated to handle cosmetics and pharmaceuticals. Since the move from Newark the two working lines have been "beefed up" by the addition of coders, cappers, and high-speed labelers.

Typical of so many aerosol plants, the Sun-Lac operation devotes a good portion of its warehouse space to component storage. Boxed valves and cans from most of the major manufacturers are kept in good supply to take care of quick orders from the company's cosmetic, chemical specialty, and insecticide customers.

To keep five lines going the bulk storage facility has been equipped with seven different fixed storage tanks, and also can handle drop shipped drums.

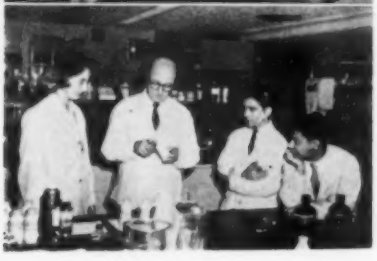
Mr. Rubinfeld showed off his firm's research facility with what appeared to be considerable pride. The fully-equipped aerosol laboratory, headed by research director Salvatore Noto, contains all of the equipment needed by the five-man staff to assist customer companies in formulation and product shelf-life study. New installations for flame testing, product viscosity studies, etc. make the new laboratory an improvement over the former area in Newark.

To keep its new plant busy Sun-Lac recently began adding to its sales staff. Assisting Mr. Rubinfeld in sales are Edward Feldman and Kenneth Roth. Mr. Feldman, a World War II army veteran, was in the N. Y. fur business before joining Sun-Lac last year. He holds the distinction of having been on the doubles team which won the national paddle tennis championship in 1959, 1960, and 1961. Also, Mr. Feldman is somewhat unique in the aerosol business in that he makes his New York City calls from a collapsible gas-powered motor scooter which he reports has enabled him to triple his city calls on any given day.

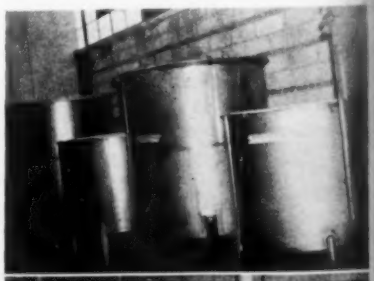
Mr. Roth, who joined the company early this year, was a former sales manager for the Motorola distributor in New Jersey.

Obviously, all this means Sun-Lac intends to keep "its hand in" the aerosol filling business. ★

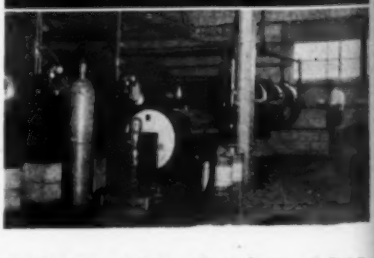
Sales staff, consisting of Kenneth Roth (left) and Edward Feldman, studies price schedule for new product.



Another view of laboratory staff, which is in charge of quality control as well as product development.

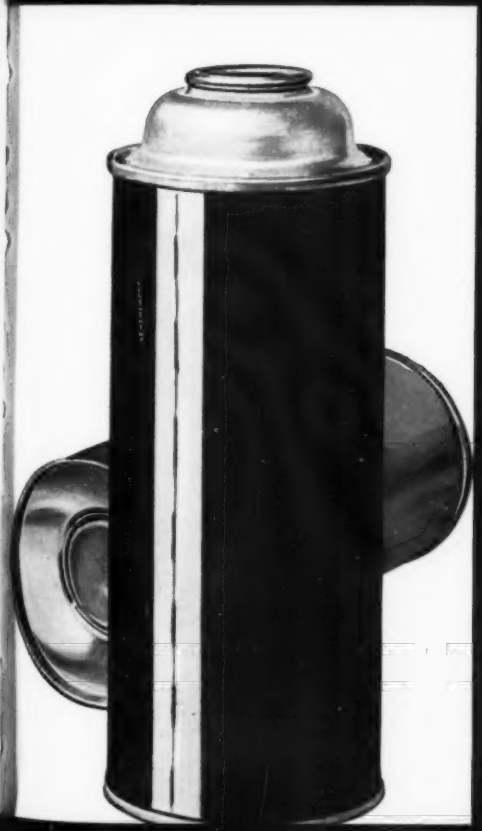


Product mixing area for one filling line consists of these five stainless steel kettles, each with direct piping to line.



Propellant storage is handled by this fixed installation of seven tanks, with room for drop shipments of smaller tanks at right.

NO MATTER HOW YOU LOOK AT IT CONTINENTAL HAS THE RIGHT AEROSOL CAN FOR YOU



Bottom, top and all around, Continental's aerosol cans have features you've been looking for:

- Dimpled nibs on the dome allow for a less expensive, single shell overcap.
- Recessed bottom for stacking means firm, attractive displays... neater shelving...easy storage
- Tri-com solder now makes for a strong side seam inside and out.
- Pre-soldered striping provides superior product protection.

Continental was first in 1947 with low pressure aerosols, and is still leading the field in design ingenuity and production capability. If you're looking to increase your sales through the use of aerosol cans, call Continental. Our Technical Center in Chicago, staffed by top-flight engineers and researchers, will work with you to develop the aerosol can that's right for your product. Added service like this is why—Whatever you package, whatever you produce, Continental has the right container for you.

CONTINENTAL CAN COMPANY

Eastern Division: 633 Third Ave., New York 17
Central Division: 135 S. LaSalle St., Chicago 3
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When the packaging is aerosol* . . .

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Private label manufacturing,
research and development of
aerosol cosmetics,
pharmaceuticals,
industrial and
chemical specialties

BRIDGEPORT 5, CONNECTICUT

***If you'd like to know about the marketability and technical story of aerosol packaging for your product, ask* ATI.**

Stanley Home Products, Inc., Westfield, Mass., has just introduced its **Lady Catherine** cologne in this white plastic-coated Owens Illinois bottle. Cap is by Virjune Mfg. Co. and carton by Warner Brothers Co.

Rulon Spray, a reinforced fluorocarbon lubricant, is now being offered in this new 16-ounce can by Dixon Corp., Bristol, R. I. It provides a slick surface for wood, metal, plastics, etc., with a friction coefficient as low as .07.

Swish Aerosol Elektrokleen is a cleaning compound equipped with a removable extension tube for cleaning hard - to - reach electrical equipment, office machinery, etc. Selling for $1.30, it is marketed by Montgomery Chemical Co., Jenkintown, Pa. and uses a Precision valve.

Helena Rubinstein, New York, has introduced its **Vis a Vis** in an uncoated Foster Forbes bottle with B18F metered valve and actuator by Valve Corp. of America. Puritan Aerosol Corp. is the filler.

NEW PRODUCTS AND PACKAGES

Watkins Products, Inc., Winona, Minn., has just brought out these four colognes in coated glass bottles supplied by Owen-Illinois Glass Co. All four use polished brass closures by Metal Fabrications, Inc., and use both Newman-Green and Risdon valves.

Tabu has been introduced by Dana Perfumes, New York, in this slim line perfume dispenser made by Bridgeport Metal Goods, Inc., and equipped with metered valve and stainless steel cartridge by Valve Corp. of America. Aerosol Techniques, Inc., is the filler.

Ed Pinaud, Inc., New York, has just introduced its **Lilac Vegetal Shave Cream** in this 12-ounce economy can (by Crown Cork & Seal) at a price of 79 cents. It is being advertised as the "world's finest shave cream."

Krylon Spray Adhesive is a new product of Krylon, Inc., Norristown, Pa., in a 16-ounce can—retailing at $1.95—and a six-ounce size for 98 cents. It can be used for mounting artwork, paste-ups, snapshots, posters, charts, gift wraps, etc. It will be sold at art, stationery, and office supply stores.

Coby's insect repellent and **Jeadot** sunscreen are two new products of Coby's Co., Memphis, Tenn. Refillable from large cans, the bottles are made by Owens-Illinois Glass Co. Sunscreen is to protect hair color and texture from sun and wind.

You have a working partner in aerosols at General Chemical

How formulating assistance from General Chemical helps contract fillers improve their service to customers

To back you up in your formulating work for your customers, General Chemical makes its extensive technical resources available to you. Our laboratory is one of America's finest . . . completely equipped for new product development, experimental formulating and testing of aerosol products. General's staff of experts includes aerosol specialists in cosmetic, paint, industrial, pharmaceutical, household and other types of products. This laboratory and its skilled staff are available to *help you help your customers* in formulating their aerosol products.

In addition, General Chemical offers these comprehensive services to help you strengthen your position as an aerosol specialist:

Product information bulletins—To help you evaluate formulations and product performance for your customers, General Chemical has compiled data sheets on a large number of new formulations as well as many familiar products developed and studied in its laboratory.

Sales presentations—General Chemical can help you gain new business by assisting with your sales presentations to prospective aerosol marketers.

Marketing consultations—General Chemical experts will be glad to assist and advise you on marketing and promotion.

These helpful services are available to contract fillers *free* from General Chemical . . . producer of Genetron® aerosol propellants. The "Genetron" line includes standard propellants and special blends for virtually every type of aerosol product. For full information about how you can take advantage of General's free services, phone or write the General Chemical office nearest you.

genetron®
aerosol propellants
Putting the "push" in America's finest aerosols

Allied Chemical

GENERAL CHEMICAL DIVISION
40 Rector Street, New York 6, N.Y.

By Paul Weitz
Technical Market Development, Resin Division
National Starch and Chemical Corp.
New York, N. Y.

(Nestle-LeMur Photo)

Polyvinyl Acetate Copolymer Resin

as a tool in formulating hair sprays

RECENT developments in the use of a polyvinyl acetate copolymer for aerosol hair spray formulations are attracting increased attention among cosmetic manufacturers and custom fillers. The material has been found a versatile base that offers advantages over other types used in commercially available hair spray preparations.

Announcement of a polyvinyl acetate copolymer that offers unusual properties for hair spray applications was first made two years ago by National Starch and Chemical Corp. The material known as Resyn* 28-1310, is now the basis for well-known commercial formulations and is undergoing testing in others.

Key to the versatility of Resyn 28-1310, which is readily alkali soluble (soap and shampoo), is its ability to reach various levels of water solubility through neutralization with amino hydroxy compounds without upsetting its solvent solubility properties. Hence the resin, in effect, is soluble in both solvents *and* water, thus giving hair spray chemists a most unusual formulating tool.

Formulators of aerosol hair preparations can thus control the after-spray properties of their products simply by varying the degree of neutralization. The greater the degree of neutralization, it has been found, the greater the resin's water solubility. A 50% neutralization of the resin, it has been observed, can produce a relatively stiff hair spray film with good water resistance. Neutralization as high as 90%, on the other hand, makes the resin much more water-soluble, creating a hair spray with the best balance of easy removal and humidity resistance. This versatility not only allows the formulator to highlight specific properties for a particular product without making

TABLE I

TYPICAL PROPERTIES OF RESYN 28-1310

DESCRIPTION	Polyvinyl Acetate Copolymer
FORM	Fine transparent beads
VOLATILES	2% Maximum
LBS./GALS.	6.6
*INTRINSIC VISCOSITY	0.3
THEORETICAL ACIDITY	.0012 Equivalents per gram
SOLVENTS	Aqueous Alkali Ethanol, Various Esters and Ketones

* Intrinsic viscosity measured in acetone @ 30°C.

* Registered Trademark.

You have a working partner in aerosols at General Chemical

How General Chemical experts can help contract fillers develop marketing and promotion plans

Are your advertising and promotion programs doing the best possible job in gaining new business for you? If you would like expert advice in this area, just call on General Chemical. General's specialists in marketing, advertising and sales promotion will be glad to review your present program and suggest ways in which it might possibly be improved. This service is free, to help support the growth of your contract filling business.

In addition General Chemical offers these comprehensive services to help strengthen your position as an aerosol specialist:

Formulating aid–General Chemical's fully equipped laboratory and staff of experts back up your formulating work for customers.

Sales presentations–General Chemical can help you gain new business by assisting with your sales presentations to prospective aerosol marketers.

Product information bulletins – General Chemical provides a basic library of technical information on existing aerosols and new products developed in General's laboratory.

These helpful services are available free to contract fillers from General Chemical . . . producer of Genetron® aerosol propellants. General provides standard propellants and special blends for virtually every type of aerosol product. For full information about General's services to contract fillers, phone or write the General Chemical office nearest you.

genetron®
aerosol propellants
Putting the "push" in America's finest aerosols

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complex formulation changes—but gives him varied approaches to attaining the desired end-product.

Significant Properties

In addition to the specific copolymer properties cited above, polyvinyl acetate copolymer resin has a number of general characteristics that make it particularly attractive for hair spray applications. The material is colorless, odorless, grease resistant, light and heat stable, soluble in alcohol, compatible with a wide range of modifying agents, and relatively non-reactive with perfumes. Further, it has: good adhesion, high moisture vapor permeability, good long term aging in liquid and dry states, and resistance to bacteriological decomposition.

In terms of specific hair spray advantages, these general properties translate themselves into such characteristics as good affinity for hair, good luster, good curl control, controlled water sensitivity (both non-hygroscopic and non-tacky), and alkali solubility. The curl control imparted by the polyvinyl acetate copolymer shows to particular advantage because of its relative insensitivity to varying humidity conditions. For coarse hair applications where a stiff formulation is required, suitable formulations can be made.

The copolymer can also be used for a new industry innovation, water-based hair spray. Resyn 28-1310 can be formulated for this work by adding 2-amino-2-methyl-1, 3 propanediol or other aminohydroxy compounds (for 90% neutralization) to water. Water-soluble plasticizers should be utilized when further modifications are required.

TABLE II
EFFECT OF NEUTRALIZATION ON SOFTNESS AND WATER SENSITIVITY OF RESYN 28-1310-BASED FORMULATIONS

% Neutralization	*Amount of AMPD g/100g. Resin*	*Sward Hardness Value*[1]	*Water Solubility of Film Air Dried 1 wk. at 72°F.*
0	0	44	Poor
50	6	42	Poor
70	9	40	Fair
80	10	32	Good
90	11	30	Excellent
100	12.5	24	Excellent
110	14	18	Excellent
125	16	16	Excellent

[1] Sward Hardness value is a method for measuring surface hardness of a film in relation to plate glass which is given a value of 100. It indirectly measures flexibility (i.e., materials which are soft are also generally flexible).

Type and Use of Neutralization Agent

The resin is supplied as dry, water-soluble beads. Typical properties are shown in Table I. Varying stages of water solubility can be achieved through neutralization with AMPD (2-amino-2-methyl-1, 3 propanediol).

The type and amount of aminohydroxy compound used with the resin determines its solubility, flexibility, and tackiness. The varying degrees of softness and water sensitivity obtained by altering the percentage of neutralization of the resin are given in Table II.

For convenience, the amount of aminohydroxy compound is calculated from and compared to the weight needed to react with 100% of the theoretical acidity present in the polyvinyl acetate copolymer. The calculation can be made easily as shown below:

$$\text{Grams of beads} \times \frac{0.0012 \text{ equivalents of acid}}{1 \text{ gram}} = \text{equivalents of acid}$$

Equivalents of acid times equivalent weight of aminohydroxy com-

(*Continued on Page* 150)

TABLE IV
SUGGESTED HAIR SPRAY FORMULATIONS BASED ON RESYN® 28-1310 FORMULATIONS:

I.

	Parts by Weight
RESYN 28-1310	3.45
AMPD (2-amino-2-methyl-1,3-propanediol)[1]	0.38
Alcohol soluble lanolin[2]	0.90
Isopropyl myristate (Cosmetic Grade)	0.40
Dipropylene glycol	0.10
Perfume Oil	0.35
SDA-40 alcohol (anhydrous)	94.42
	100.00

II.

RESYN 28-1310	2.40
AMPD (2-amino-2-methyl-1,3-propanediol)[1]	0.22
Water soluble lanolin[3]	0.10
Silicone 555	0.10
Perfume oil	0.40
SDA-40 alcohol (anhydrous)	96.78
	100.00

Formulation I will give a softer film than II because of the increased amount of plasticizer.

Compounding procedures for I and II will be found on page 3.

FILL:
30% Concentrate (either I or II).
70% 50/50 mix of Propellant 11/Propellant 12[4]

[1] Commercial Solvents Corp.
[2] Such as Isopropylan 33 (Robinson-Wagner Co.—Mamaroneck, N. Y.).
[3] Such as Ethoxylan 100 (N. I. Malmstrom & Co.—Brooklyn, N. Y.).
[4] Freon—E. I. DuPont De Nemours & Co.
Genetron—General Chemical Division of Allied Chemical Corp.
Isotron—Pennsalt Chemicals Corp.
Ucon—Union Carbide Chemicals Co.

You have a working partner in aerosols at General Chemical

Sales presentations *. . . an example of service from General Chemical designed to support the business growth of contract fillers*

To help you develop new business, General Chemical makes available its staff of sales, marketing and technical specialists to work with you on sales presentations to prospective aerosol marketers. General has prepared an interesting, informative sales presentation designed for busy executives and will help adapt it to your personalized selling needs. In this way the resources and capabilities of General Chemical support your business growth.

In addition, General Chemical offers these comprehensive services to help you strengthen your position as an aerosol specialist:

Formulating aid—General Chemical maintains laboratories and aerosol specialists to back you up in formulating work for your customers.

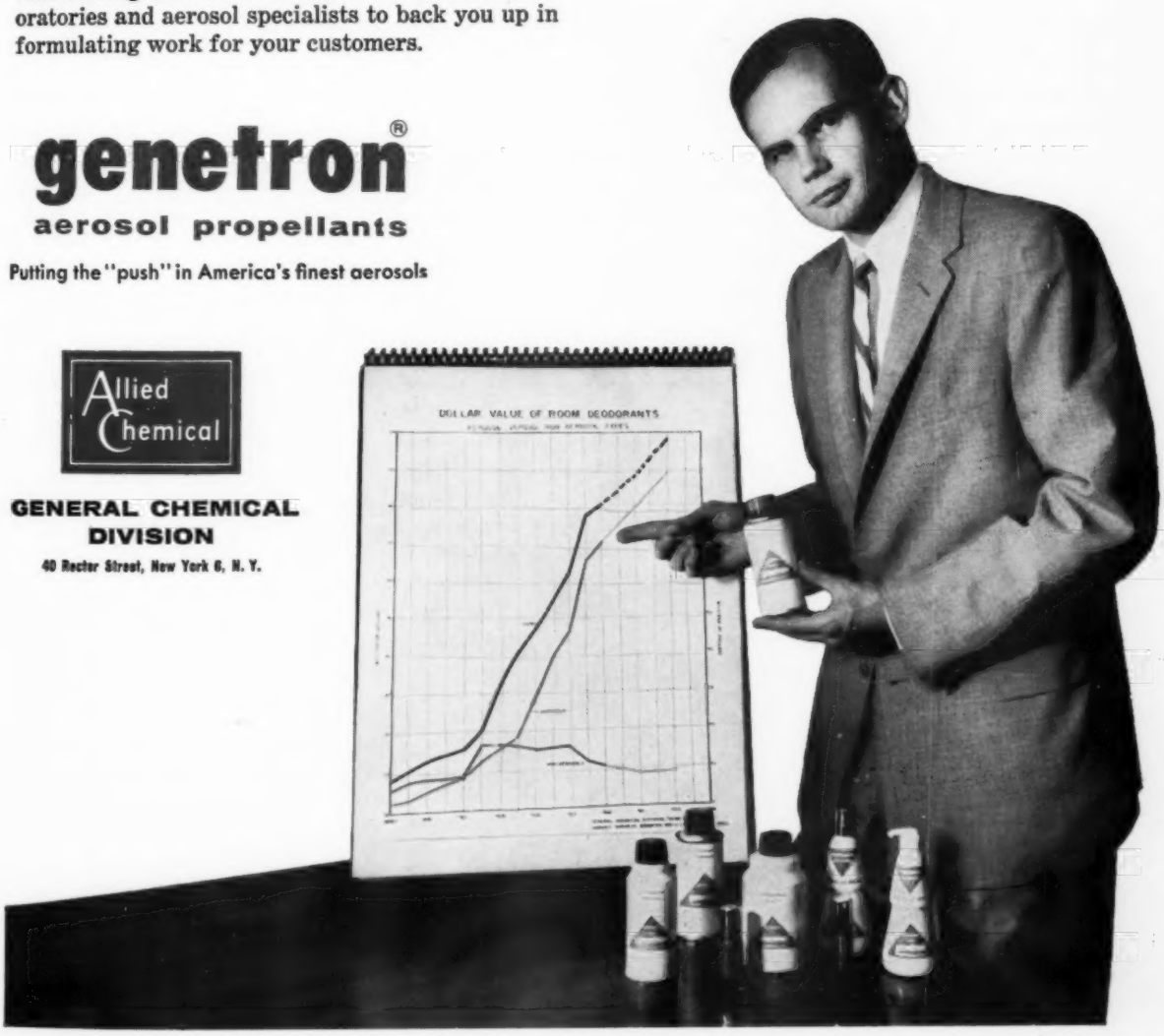
Product information bulletins—To help you evaluate formulations and product performance for your customers, General Chemical has compiled data sheets on a large number of new formulations as well as many familiar products developed and studied in its laboratory.

Marketing consultations—General Chemical experts will be glad to assist and advise you on marketing and promotion.

These helpful services are available to contract fillers *free* from General Chemical . . . producer of Genetron® aerosol propellants. The "Genetron" line includes standard propellants and special blends for virtually every type of aerosol product. For full information about how you can take advantage of General's free services, phone or write the General Chemical office nearest you.

genetron®
aerosol propellants

Putting the "push" in America's finest aerosols



Allied Chemical

GENERAL CHEMICAL DIVISION
40 Rector Street, New York 6, N. Y.

Aluminum Cans

for tomorrow's aerosols

By Peter W. Sherwood
Research Engineer
White Plains, New York

THE AMERICAN aerosol industry has been curiously reticent about accepting aluminum aerosol cans for any extensive product use. Early attempts to market aluminum-packaged aerosols, made in 1950 and 1954, appear to have given aerosol technical people a hesitant attitude about using these containers.

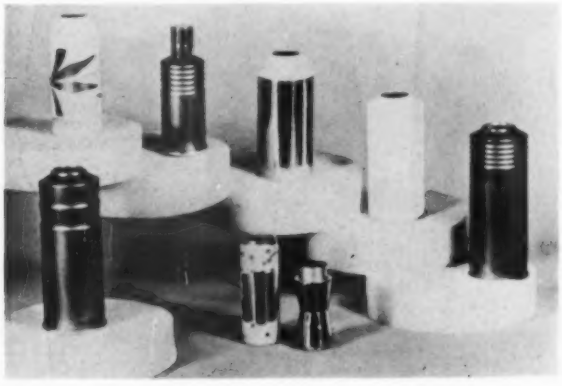
However, since 1954 technological advances in the production of aluminum cans have made commercially available units of good strength and excellent appearance, and advances in formulation research have made possible the adoption of this container for a far wider range of products.

Of course, one drawback has been that despite these technological advances, the cost of the aluminum container has not yet been reduced to that of tinplate. In countries where the price difference is not significant, mainly in Europe, aluminum cans are used extensively and in fact account for 100% of Italy's aerosols, the bulk of those produced in Switzerland, and a good percentage of those filled in France.

In the United States, the aluminum can has so far made its chief inroads into specialty and drug products less sensitive to container cost and in which can appearance and weight are controlling considerations. Illustrative of the specialty product type is the set of aerosol cold wave lotion and instant neutralizer introduced early last year by Caryl Richards. Initial estimates made for this product range up to five million units.

The two commercial aluminum aerosol units are the single piece, seamless unit made by extrusion, and the two-piece unit made by drawing or extruding the shell and double seaming it to the bottom. In the latter, the bottom may be either aluminum, tinplate or aluminized steel, of course depending on the product to be packaged.

As the aluminum can becomes more available to the aerosol packager in the U. S. and Canada, it becomes necessary to review some of the basic fundamentals necessary to guide the use of aluminum cans. He should have a clear understanding of what this new metal can do and of what it cannot.



This Continental Can photo shows a number of aluminum aerosol cans introduced over the past five years. The fluted-side units were from Hunter Douglas Division of Bridgeport Brass.

The Case for Aluminum

Three important characteristics make up the principal case for the aluminum aerosol:

1. *Good Appearance.* The single-piece can with the drawn-in neck allows a good deal of latitude as to basic shape and permits all-round lithography and continuous internal protective coatings. One important point to note here is that each can must be individually lithographed, thus resulting in slower operation and higher cost than can be achieved in the printing of flat sheet which is to be rolled into side seam cemented cans. One further esthetic advantage is that aluminum cans may be embossed with decorative and functional designs in the course of extrusion.

2. *Light Weight.* An aerosol container of six-ounce capacity requires one ounce of aluminum as against about two of tinplate. The weight saving results in some benefit to the user, especially in products for the women's market, and it may also effect some freight benefits, but this last advantage is obscured by the complexity of freight cost structures.

3. *Freedom from External Rusting* provides a minor but important benefit in products intended for kitchen or bathroom use.

Some Limitations

Any fair comparison of aluminum with tinplate for aerosol use must consider the important aspects of

(*Continued on Page* 141)

You have a working partner in aerosols at General Chemical

Product bulletins from General Chemical provide a basic library on aerosol formulations for contract fillers.

To help you in your formulating work for customers, General Chemical has compiled informative data sheets on a large number of aerosol products. Bulletins cover existing aerosols and new products developed in General's laboratory. Information is included on formulations, product advantages, methods of application, stability, flammability, pressures used and competitive products. These informative bulletins provide a basic library of technical data on aerosols to help you develop formulations and evaluate product performance for your customers.

In addition, General Chemical offers these comprehensive services to help you strengthen your position as an aerosol specialist:

Sales presentations – General Chemical can help you gain new business by assisting with your sales presentations to prospective aerosol marketers.

Formulating aid – General Chemical's fully equipped laboratory and staff of experts back up your formulating work for customers.

Marketing consultations – General Chemical specialists will assist and advise you on marketing and promotion ideas for presentation to your customers.

These helpful services are available free to contract fillers from General Chemical . . . producer of Genetron® aerosol propellants. General provides standard propellants and special blends for virtually every type of aerosol product. For full information about our services to contract fillers, phone or write the General Chemical office nearest you.

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In Canada, top: Skip Pulhan (S. C. Johnson), Ted Hart (Aerocide Dispensers), Ivor Guest (Shulton of Canada), and Les Waterfield (Boyle-Midway Ltd.), Ty Lowe (American Can of Canada), Ross Paterson (A. S. Paterson), Gordon Gilroy (Precision Valve) and W. Collier (American Can). Joe McCullough (Precision), At Breeze (Givaudan Ltd.), John Housley and Russ Tolchard (Consolidated Alcohols). Don Ross (Aerosol Pkg. of Canada), Joe Gregory (Newman-Green), and Joe Butters and L. Tipple (Union Carbide).

Bottom: Don Lee (DuPont of Canada), John Thompson (D & O Ltd.), Frank Oster (Javex Ltd.) and Bruce Sleeman (DuPont). Carl Durant (Aerocide), Ray Wagner and Harry Smith (G. H. Wood) and H. Morrow (Canada Rex Spray). Ted Johnstone (Conn. Chemicals of Canada), Kel Doyle (Crown Cork) and Jerry Durant (Aerocide), Ralph Legate (Aerocide), Don Ross, Carl Durant, and Gordon Lang (Conn. Chemicals).

Thompson, Drell Score In Industry Golf Tournaments

JOHN THOMPSON of Dodge & Olcott, Ltd., shooting a sparkling 74 won the second annual golf tournament of the Canadian Manufacturers of Chemical Specialties Association on Sept. 12 Mr. Thompson had to fight off some hot competition at the Aurora Highlands Golf Club, near Toronto, to win the C.M.C.S. trophy from some 70 other golfers.

Among Mr. Thompson's closest competitors was Gordon Lang, winner of the 1960 trophy, who ended with a low net of 72 to win the Precision Valve Trophy. Second low gross went to Press Carr (with a 75), and third to Joe McCullough of Precision Valve, with an 83. In the low net category, Bruce Sleeman, of Du Pont of Canada, was second with a 72; Ken Staples was third with a 73; Joe Gregory, of Newman-Green Inc., was fourth with another 73; and Jack Furnish of Javex Ltd. was fifth with a 74.

Other prizes were won by:

Les Waterfield, Boyle-Midway.

Gordon Gilroy, Precision Valve Corp.

Don Ross, Aerosol Packaging of Canada Ltd.

Art Breeze, Givaudan Co. Ltd.

George Flemming, Guardian Chemicals & Equipment Co.

D. Jenson, S. C. Johnson & Son.

Ian Vassie, DuPont of Canada, Ltd.

Ralph R. Legate of Aerocide Dispensers Ltd. was chairman of the event. ★

Drell Wins CSMA Midwest Golf Tournament

THE AEROSOL Division was well represented in the winner's list at the Chemical Specialties Manufacturers Association's Midwestern Golf Tournament at Itasca Country Club, Chicago, on Sept. 19. Playing under clear skies, Leonard Drell, of Aeropak Inc., Chicago filler, shot an 80 to win first low gross. He edged out another aerosol industry golfer, Len Cannella of Continental Can Co., who had to settle for an 81.

A total of 121 golfers teed off for the contest, which was the second held in the Chicago area, and another 15 non-golfers joined the group for dinner.

Another aerosol industry golfer, Seth Schenible of Crown Cork & Seal Co., with a round of 68, was edged out for low net by Ed Thomas of Swift & Co., who carded a 67. The rest of the low net list was dotted with aerosol people:

3. Art Bohnert, Enterprise Paint —69.
4. Don Earnshaw, Continental Can —69.
5. Bob Svendsen, Chase Products —70.
6. Chuck Morrison, Federal Varnish—70.
7. B. Crouch, Verona Aromatics —70.
8. J. Breckenridge, American Can —70.
9. W. Williams, George Williams Co.—71.
10. Ed McKernan, E. J. McKernan Co.—71.

(*Continued on Page* 151)

We could go on like this all day!

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ECONOMY SIZE 24-OUNCE PRESSURE CAN

(Large as Life)

AND SHOWN LIFE-SIZE

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BIG AND HANDSOME! This jumbo-size, extra convenient pressure can is available in lustrous, full-color lithography. Your brand will look bigger and more eye-catching than ever!

LOWERS PACKAGING COSTS! You can count on real savings from this can's *lower packaging cost per ounce of product.* You save valuable plant space . . . and cut handling costs, too.

LOWERS SELLING COST! Dealers get the benefit of a higher profit item that takes approximately the same shelf space as conventional size cans. Dealers will want to sell more . . . because they net more!

RAISE YOUR PROFITS with Canco's new, exclusive 24-oz. pressure can. In addition to selling consumers, now you can open up the big, profitable institutional market that is looking for long-use, reduced inventory units. Think of the profit possibilities in institutional use of hair sprays, room deodorants, whipped toppings and other food applications! For more information on the new 24-oz. can, get in touch with your Canco salesman. Call him today!

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Pero Joins Lee Packaging Labs

Aldo S. Pero, former owner of Packaging & Plastics Co., Pompton Plains, N. J., has now become sales manager for Lee Packaging Laboratories, Inc., 30 Main Street, Brooklyn, N. Y. He will be in charge of all sales, sales promotion and advertising for Lee.

Well known in the packaging industry, he was previously vice president of Fluid Chemical Co., Newark, N. J., and general manager of Precision Extruders Division, Foster Grant Co., Leominster, Mass.

Lee Packaging Laboratories recently expanded its plant facilities and presently have available approximately 33,000 sq. ft. of space for their varied packaging activities. Lee now engages in contract packaging of liquids, powders, and tablets and also manufactures and assembles customer products utilizing thermoformed blisters, skin packaging, bag and pouch packaging, strip and unit packaging, and do general assembly work.

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TGA Lists Scientific Program

Four papers will be presented at the morning session at the TGA Scientific Section Meeting on Wednesday, Nov. 29th, in the *Empire Room* of the Waldorf-Astoria Hotel, New York. The papers are as follows:

Properties and Reactions of Hair After Treatment with Mercaptans and Differing Sulfhydryl Acidities by J. W. Haefele and R. W. Broge, Procter & Gamble Co.

Response of Normal and Damaged Human Skin to Prolonged Tropical Treatment with Female Hormones by Herbert J. Spoor, Ph.D. & M.D., Cornell University College of Medicine.

Use of Water Soluble Certified Dyes in Oily Media, by Robert L. Goldemberg, Shelia O'Leary and Nathan A. Ziskin, Shulton, Inc.

The Determination of Bacteriostats in Cosmetics: Para hydroxy benzoate, dichlorophenes, hexachlorophene, by P. D. Derry, M. Holden and S. H. Newburger, Division of Color and Cosmetics; Food and Drug Administration, Department of Health, Education and Welfare.

The afternoon session will be devoted to the subject of color additives. A panel of experts will be on hand to answer questions both from the floor and from members who may care to send their questions in to the association in advance. Luncheon will be held in the *Sert Room* of the Waldorf-Astoria Hotel.

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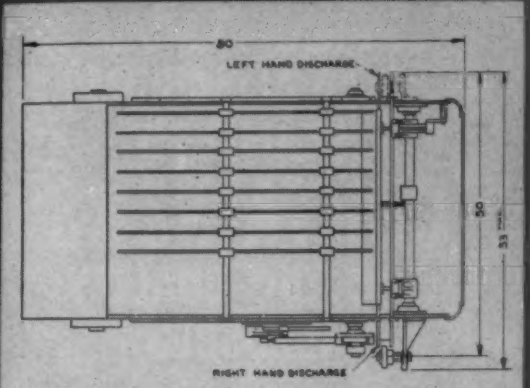
Schueler & Co. Adds to Staff

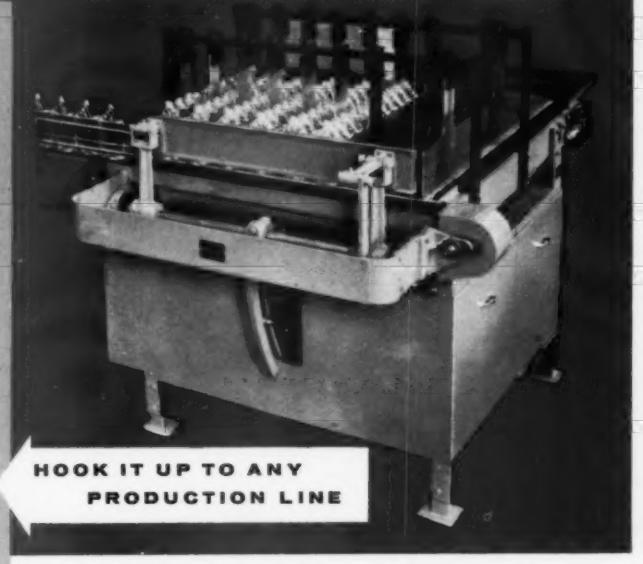
Schueler & Co., New York marketer of spray bandages and other pharmaceutical products, last month announced two appointments in its Medical Products Division. H. Richard Wright was named sales promotion manager and Arthur Harelich was appointed marketing manager.

LINES THEM UP FOR ORDERLY FEEDING

low cost unit simplifies "unscrambling"

CARBERT CONTAINER FEEDER





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Impact extruded! No leakers!

Highest resistance!
300 psi

Lowest weight
12 oz. container 1.41 ozs.
6 oz. container .89 ozs.

Full range of sizes to meet any requirement of the aerosol industry. Wide choice of diameters, heights and shapes.

One-inch opening to fit any standard 1" valve cup.

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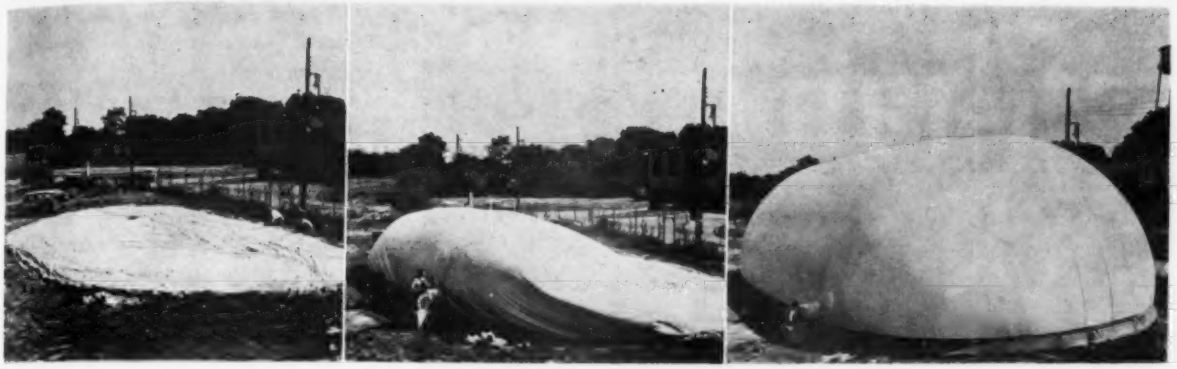


Erection of a 30x60-foot building is begun after unit is removed from station wagon (left). Whole job was done by three men in less than an hour.

"Quick-Order" Warehouses

one way for the aerosol packager to handle seasonal "ups and downs" in production and product storage

AEROSOL custom fillers and marketers have always had to contend with one major problem which periodically seems to defy solution: what to do about warehouse space for components and finished products varying widely in volume from one week to the next. The major fillers usually have the resources to maintain "reserve" warehousing, combined with quick shipment techniques to clear finished products out of storage quickly and efficiently. Others rely on temporary lease-arrangements whereby they rent sections of larger building in their own or nearby cities.

But what of the small filler or marketer who finds his warehouse sorely taxed by the production of a "hot new product," or whose volume suddenly mushrooms on the heels of a half-million-can order. If his plant is located in a suburban or rural area, this sudden burden of component deliveries or finished product could conceivably force the filler (or marketer) to reduce or even temporarily shut down his production.

One logical solution to this ever-present problem is something called an "Airshelter" — an air-supported nylon structure which can be erected quickly in close proximity to the filling plant. "Airshelters" are made by Airshelters, Inc., Akron, O., a subsidiary of the Irving Air Chute Co., inventor of the free-fall parachute and the world's oldest and largest manufacturer of parachutes.

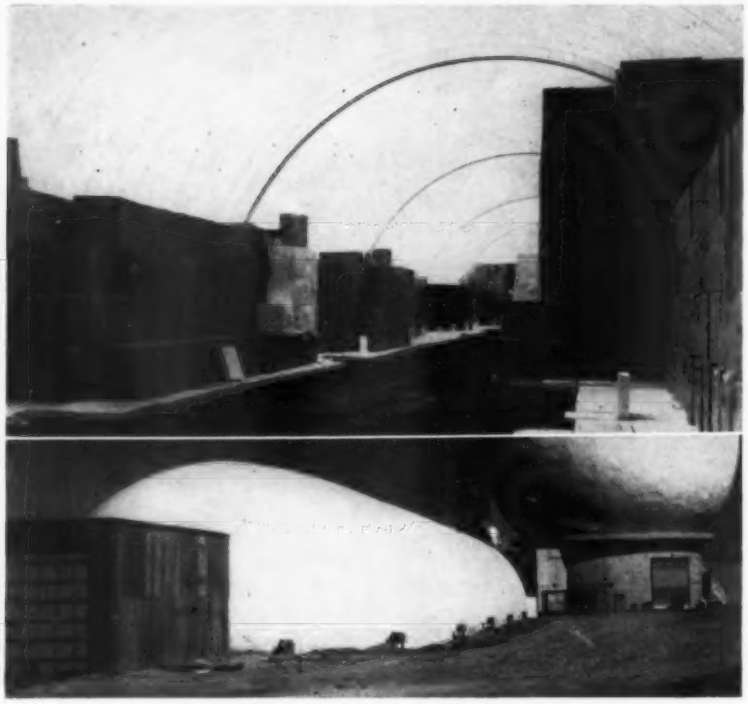
Since in effect the Airshelter is a parachute anchored firmly to the ground, it requires no internal support — thus all the interior floor space is useable for warehousing. Heart of the structure is a low-pressure blower which must maintain the proper amount of pressure under any conditions. The blower, exactly like that used to operate the airflow in hot-air heated homes, is a centrifugal fan of forward curve design, commonly known as a "squirrel cage" type, which transmits the air to the interior of the structure by a sheet metal duct. The blower package is designed and furnished for each installation depending on size, and a building 60 x 120 will require two 2 hp. units.

Just as important as the blower is the base needed to resist the lifting force exerted by the air pressure. Airshelters, Inc. explains it this way: "The normal uplift load or static force of a structure will vary in direct proportion to the diameter, which means that the load of a 60-foot diameter building is twice the amount of a 30-foot diameter building. An additional load or aerodynamic force is developed by high winds so that the load on any single anchor in a 60 foot building may reach 2500 pounds in a hurricane." It is pointed out that the air-supported structures are designed for 75 m.p.h. winds. Among the anchoring techniques advised are:

1. The catenary cable base system — a stranded steel cable, coated with nylon, is incorporated into the skirt of the shelter, and it is exposed for ground attachment every 4 feet.

2. Pipe beam base system — the fitting for pipe sections through the sleeve in a continuous ring which in turn is anchored to the ground by clamps.

3. Curb rope base system — a masonry curb is constructed to the exact perimeter outline to which the shelter is fastened with bolted



Top photo: Interior shot of air-supported building used as a warehouse.

Bottom: Finished structure in use at U. S. Army Nike-Zeus base shows airlock in left foreground through which trucks may enter.

angle iron.

4. Ground anchor and fittings — the auger and clevis are either inserted directly into the ground or a hook bolt or eye bolt is used with the clevis.

THE Airshelter is made of heavy cord 840 Denier nylon coated with a vinyl plastic to screen out the sun's ultra violet rays and cushion the fabric. Standard 5.5 ounce nylon fabric is coated to 18 ounces over all weight per square yard, thus making it resistant to air loss, water, fire, abrasion, mildew, gasoline, and other wearing agents. The company estimates that there is negligible loss of strength over the first three years, with "some slight acceleration" from three to five years. Beyond that, deterioration is more rapid, it is pointed out, and "retained strength may reach minimum design requirements by seven to ten years."

Since blower maintenance of air pressure is so important, the entranceway is limited to a type which will allow relatively quick access without loss of pressure. Cargo entrances are usually of three types: (1) a simple bumper type, handy for fork lift trucks, with double doors which swing in and out and then close automatically; (2) an overhead door, operated either manually or electrically, which, because of the wide opening, may require extra blower capacity; and (3) an airlock entrance with double doors, one opening at a time. The latter may be spacious enough to handle a large truck.

Heating or cooling of products stored in the shelter presents no particular problem, since any conventional type of independent heating or cooling unit may be used with additional vents. The translucent fabric permits enough sunlight to penetrate to give adequate natural light, and windows may be added. Artificial lighting is enhanced in the curved walls and ceilings.

Such shelters have been on the market for more than five years. In 1956, one of the first air-supported warehouses, a 40 by 80 foot unit, was erected for Standard Oil of Ohio at Lexington to store out-of-season antifreeze. That same year saw construction on an 130-foot unit for use as a permanent cap for a water-storage tank. Air supported warehouses have been used for munitions and fuel storage (at Nike bases), for new appliances, beer bottles, and to shelter swimming pools. One globe-shaped Airshelter was used by Pan American Airways for its Brussels Worlds Fair Exhibit.

All of this would seem to indicate a good potential for aerosol use.

In addition to Airshelters, Inc., a number of other nylon fabricators have introduced their versions of these units. Union Canvas Products, Carlstadt, N. J. and Raven Industries, Inc., Soux Falls, S. D. are two others who can supply similar units. In fact, Raven Industries has developed a sturdier structure by spraying urethane foam on the interior of the air-supported structure. When the outside skin is peeled off, the exposed foam is painted or covered with a protective coating. To reinforce the main section, seven thicker foam arches are used, though the average thickness of the walls is 5.66 inches.★

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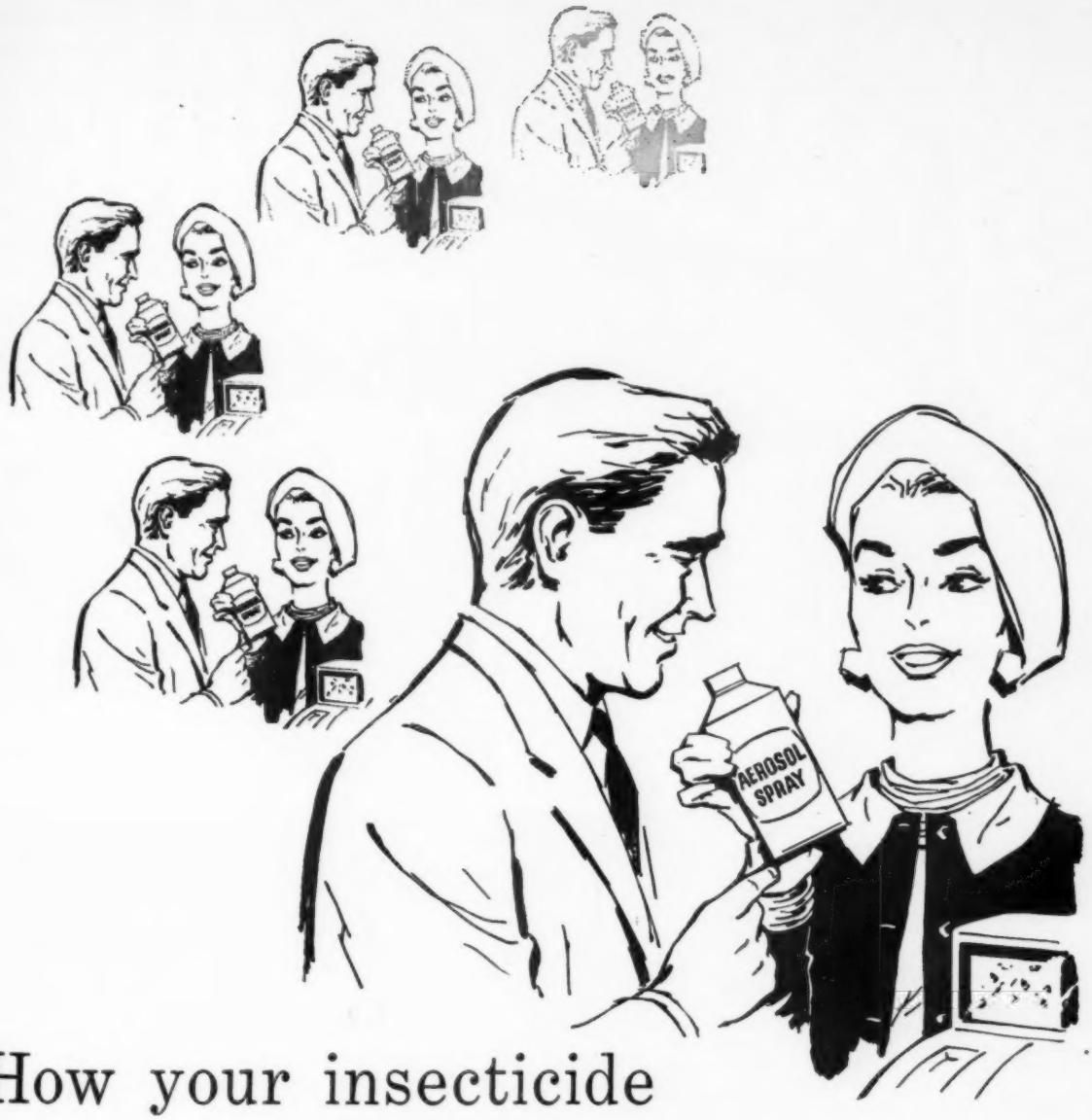
Breck Sponsors Beauty Contest

As part of a special promotional campaign in Central and South America, John H. Breck, Inc., Springfield, Mass., will underwrite a beauty contest to be held in January 1962 at Manizales, Colombia, to select the most beautiful girl in Latin America. Finalists at the affair, to be held in conjunction with the eighth annual Manizales Fair, will be winners of contests conducted in seventeen different Latin American countries by Breck distributors.

Included among the prizes awarded to the final contest winner is an all-expense-paid trip to the United States, with visits to major cities in this country, plus a complete wardrobe created especially for her by Valdiosera, famous Mexican designer and artist. Co-ordinating the contest for John H. Breck, Inc., is Jose Marcial, Jr., director of international sales for the company.



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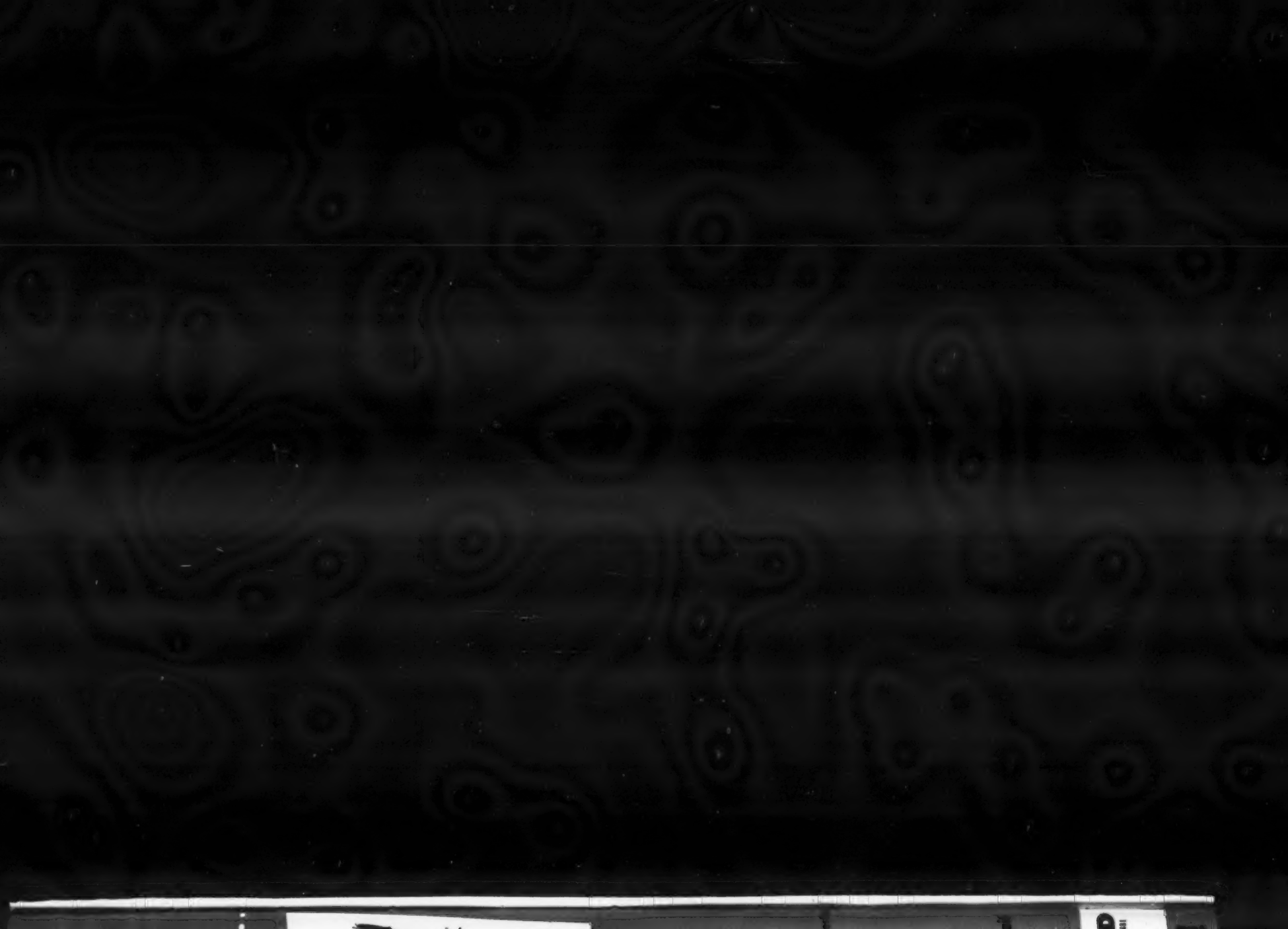

AEROSOLS in review

A summary of aerosol articles in other publications

AN apparently sound analysis of the aerosol flat tire repair units is featured in the September issue of *Consumer Bulletin*, product rating periodical published by Consumers Research, Inc., Washington, N. J. Though at $5 most of these devices are expensive, the article points out "they can be worth their price, not only because of the time and labor saved, but because usually the person changing the tire on the road will very likely soil his clothing, and that may involve a substantial dry-cleaning bill or, with a woman, even the purchase of new garments."

Consumer Bulletin chides the advertisements for the products as being slightly misleading since they make no mention of the fact that the "instant repair" is a stop-gap rather than a permanent measure. It reports that a repaired flat driven 60 miles gave way relatively quickly. "We believe that a device of this kind may be regarded by many as a worthwhile purchase for a quick emergency repair of a minor puncture on the road. It does have certain rather serious limitations which become evident after one has bought the device and carefully read and considered the instructions. (1) The device will not work on a tubeless tire if the bead has separated from the rim (as would likely occur if the car had been run for some distance with the flat tire, and might occur for other reasons). (2) The repair may very likely not be permanent, and it would be best to head for a service station."

The periodical also finds fault with the fact that the product reads "Do not store above 120°." It says: "This presents a real problem in a hot climate, since the temperature inside the car or its trunk will very often go far above that figure on a hot day, and handling a device which may be on the point of bursting because of overpressure could involve a very serious hazard to the user (assuming that the 120° limit has been correctly established by the official or governmental agencies concerned). We should be inclined to recommend against use of device in the 120° temperature limit category except during relatively cool weather, and with due precations against very high temperatures being reached inside the car. Except in very hot climate, opening of several windows of a car would normally keep the air temperature in the car safely under the 120° mark. If windows are not opened, because, for example, of valuable items left in the car, temperatures of the order of 160° or more may easily be reached in some parts of a car. The floor at the rear, on the side away from the exhaust pipe, and the bottom of the trunk (away from the exhaust) are likely to be *relatively* cool spots."

•

HIGHLIGHT of a series of excellent aerosol articles in the September issue of *Canadian Packaging* is one titled "Aerosol—'Bomb' That is Still Bursting," by Richard L. Edsall of Edsall Research Ltd. This particular article reports the results of two large-scale consumer surveys among cross-sections of the public in Greater Montreal and Greater Toronto. Conducted for DuPont of Canada in 1959 and 1961, the 4,218 surveys revealed these interesting facts about the Canadian aerosol market:

1. Familiarity with aerosols among Canadians is growing. In 1959, 90% of the consumers knew what was meant by "push-button cans." In 1961, this familiarity was up to 93%.

2. The preference of Canadian women for aerosols is stronger than that of men, and the English Canadians favored them slightly over the French.

3. Convenience is the chief reason given for preference, and mere habitual preference for the conventional package was the chief reason against liking aerosols.

4. Montreal would appear to be a better aerosol marketing city than Toronto, since of the 16 products studied in a 1961 survey, seven were used to a greater extent in Montreal than in Toronto, only four in Toronto.

5. Men are more concerned about the higher cost of aerosols than women (34% to 26%).

6. Room deodorants (87%) and water repellents (86%) scored highest among percentages of women who have tried each aerosol product and intend to buy it again. Other products which scored well in this category were mothproofer (79%), shoe shine spray (80%), spray paint (78%) and spray bandage (80%).

•

A REPORT on what customers spent for various products sold in food stores during 1960 is included in the August 28th issue of *Food Field Reporter*. Among the aerosol products listed, one, aerosol deodorizers, had the distinction of being included among the ten "fastest growing non-edible grocery and

There Oughta Be A Law

THOSE INSECT SPRAYS THAT SOUND SO SIMPLE AND EASY TO USE IN THE STORE
I'VE GOT ANTS IN MY PANTRY! WHAT DO YOU RECOMMEND?
GOT JUST THE THING, LADY! BUG-BLITZ! COUPLE SQUIRTS AND ITS ALL OVER!
HARDWARE
WHEN YOU READ THE DIRECTIONS - OBOY! HEAD FOR THE NEAREST FALLOUT SHELTER!
DIRECTIONS
BEFORE USING
1. EVACUATE CHILDREN, PETS AND PLANTS FROM HOUSE
2. PUT ON GLOVES
3. HOLD BREATH
AFTER USING
1. HOLD BREATH
2. BURY ALL CLOTHING
3. BATHE THOROUGHLY
4. OPEN DOORS & WINDOWS FOR THREE (3) DAYS
5. SCALD DISHES & UTENSILS
CAUTION! BUG-BLITZ IS HIGHLY TOXIC! IN CASE OF DIZZINESS CALL DOCTOR IMMEDIATELY!
THANKS TO RALPH BLUMBERG, 2857 SO. HERMAN ST., MILWAUKEE 7, WIS.
8-30

The Portsmouth Herald, Portsmouth, N.H. Wednesday Evening, August 30, 1961

non-food products excluding health and beauty aids) in grocery stores in 1960". This product showed a sales increase of 12.2% over the previous year, with $25,010,000 sales in 1960.

Aerosol insecticides were well reported by the publication. As a general class, the total sales of $64,960,000 showed $39,180,000 sold in grocery stores, an increase of 0.2% over 1959. This was broken down into $1,010,000 in moth control agents, $27,700,000 in space sprays, $7,850,000 in surface sprays, and $2,620,00 in all other aerosols. Of the four categories, only space sprays showed a loss—0.6% less than were sold in 1959.

Aerosol deodorizers showed a total sales of $59,600,000, of which $25,010,000 were sold in grocery stores. This was a 12.2% increase over the $22,290,000 sold during the previous year.

Spray hair fixatives showed a similar gain. Of the total sales of $81,250,000, some $36,570,000 were sold in grocery stores. This was a 12.2% increase over the $32,590,000 sold in grocery stores the previous year.

Aerosol shave creams, which have been recording consistent sales gains in grocery store outlets in recent years, in 1960 recorded a whopping 17.5% gain. Of the total domestic consumption of $51,110,000, some $17,000,000 were sold in grocery outlets, as against $14,460,000 in 1959.

•

THE aerosol perfume market may finally be ripe for an exploitation by aerosol packagers on a scale similar to that pursued in the cologne field. This is the conclusion of an article by Donald S. Tuttle, Jr., vice-president of Risdon Manufacturing Co., in an article in the September issue of *Drug & Cosmetic Industry*. Mr. Tuttle suggests that the growing popularity of aerosol colognes, coupled with their ease of application and product protection, will very likely cause all the major perfume marketers to soon bring out pressurized versions of their products.

He reports that the many new refinements in the aerosol package, particularly in the area of metered valves and cosmetic-type outer packages, would contribute toward this new trend. The article further suggests that the aerosol package will bring a pronounced increase in total perfume sales.★

Now Issued—U. S. Patent #2,995,278

It's the water that makes it good. This patent relates to new, low cost, non-flammable aerosols containing water, alcohol and less dense propellant. Products applicable include hair sprays, room deodorants, insecticides and others—the volume products that really count. The spray can be tailored to meet most any requirement. The important feature is savings—big savings. Also new solute systems can be employed that were heretofore not possible (because of the water).

We are convinced that this patent will be of real value in advancing the aerosol industry. The basic work covered in this patent has been under development at Western for many years. We originated the concept. Now, as the patent holder, Western Filling assumes a broad basic position in lowering aerosol costs by perfecting the stringent requirements of this exacting system.

Oh, we're just bursting with new ideas. This development is only one of many. We'll wager a lunch that we've got at least one new product that will interest you right now. Want to bet?

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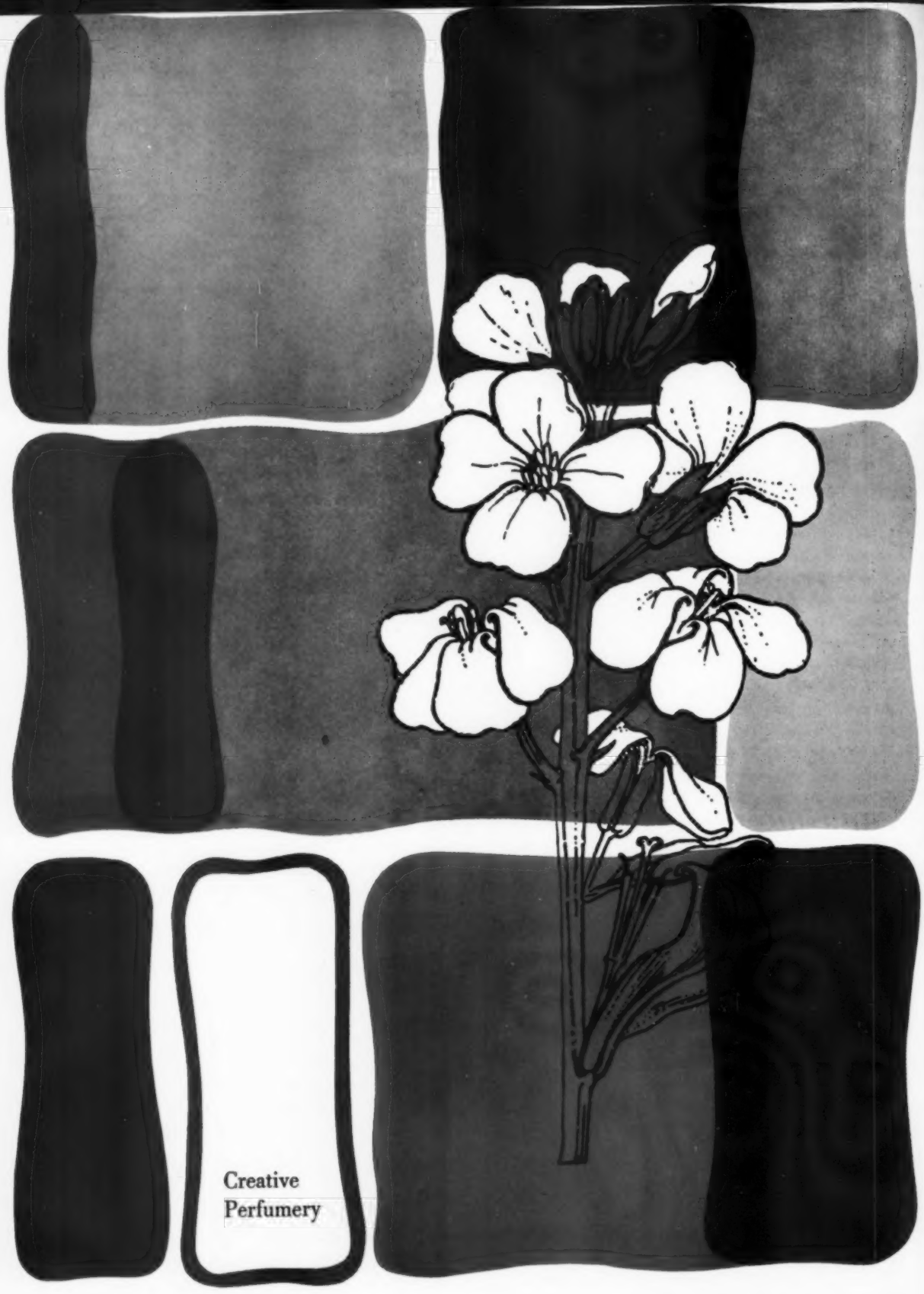

FLEUROMA

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NEW YORK CHICAGO PARIS LONDON SAO PAULO

Aerosol Containers

a look at present practices
an analysis of future trends

By J. J. Buchanan*
Supervisor
Packaging Service Section
Continental Can Co.
Chicago, Ill.

AFTER 14 short years of existence the aerosol industry last year produced nearly 700 million containers. A share of the credit for this should go to the Compressed Gas Association for its assistance in working out Interstate Commerce Commission exemptions which permitted the shipment of low pressure aerosols.

It hardly seems necessary to mention that it all began in 1942 and 1943, when Goodhue and Sullivan, working for the U. S. Dept. of Agriculture, perfected an aerosol insecticide container and formulation. The direct result of this was the insect bomb of World War II. It was made of heavy gauge steel with braised or silver soldered seams, usually was refillable and contained about one pound of material. Although this container enjoyed limited success in the civilian market after the war, it was too expensive and lacked customer appeal for its full potentialities to be realized. The can industry recognized this and long before V-J Day had started work on the development of lighter weight disposable containers for this new idea in insecticides. Others were at work on formulations and valves that could be used with these containers. These efforts were culminated in 1947 when the first low pressure aerosol containers were made commercially available. These were of two types: the drawn two-piece container and the three-piece or fabricated container. The original three-piece container with the two concave end units has now largely disappeared from the market. The aerosol containers evolved from the beer can but utilized special structures to provide greater strength to meet the more stringent requirements of the aerosol products. From this meager beginning have come metal containers ranging in size from about 3-ounce nominal capacity to 16-ounce, with larger sizes up to about 24-ounce capacity under consideration.

Metal containers usually employ the one-inch curled opening to accept the one-inch valve mounting cup. This method of valve attachment has become standard for both tin plate and aluminum aerosol cans, although certain valves can be attached directly to the top ends of tin plate containers, with the can then being closed by double seaming of the end to the can body.

Tin plate containers are drawn or fabricated from mild cold reduced steel usually coated with an extremely thin layer of pure tin. The tin coatings used are .25, .50 and 1.00 pound per base box electrolyic tin coatings and 1.25 pounds per base box hot dipped tin coating. The base box, used in the can industry as a reference area to express both tin coating and plate weights, comprises the area of 112 sheets 14 x 20 equaling 31,360 square inches. The weight of the plate will vary from about 80 pounds per base box for three-ounce aerosol can bodies to perhaps 128 pounds per base box for the dome tops of 16-ounce cans. The temper of the plate is dictated mainly by the amount of working the metal will receive in the manufacture of the can component, lower temper being required for multiple draws such as dome tops. The choice of metal will also depend on the pressure requirements of the finished container. These cans may be furnished plain inside or coated with a variety of protective coating materials such as vinyls, phenolics, and epoxies which are selected on the basis of individual product requirements. Both drawn and fabricated containers have a rubber-like sealing material called compound in the end seams to provide a gas tight seal. A number of specific compounds are available for use depending on the product to be packed.

The fabricated container has a soldered side seam whose structure is designed for optimum strength. The solder used customarily is composed of about 2% tin and 98% lead. Solder consisting of 100% tin is sometimes specified. It may be used where the product causes undesirable precipitates to be formed with the lead of the solder, and it may be used to decrease the electrochemical corrosion within the can. With some products the solder will electrochemically act as a very powerful cathode

* Presented at the annual meeting of the Compressed Gas Association, New York, on Jan. 24.

Early high pressure unit was far heavier, less versatile, and more expensive than current low pressure unit.

providing much of the corrosion driving force. In such cases, the corrosion of the container may be reduced by use of tin solder. Another way of reducing this type of corrosion is to provide a side stripe which is a protective material that is sprayed over the side seam area of a fabricated can on the manufacturing line. New advances in materials and methods of side striping show promise of providing a degree of protection that may largely eliminate use of the more expensive 100% tin solder. Recently a new high strength three-component solder has been developed which provides greater strength when necessary than either conventional or tin solder.

The characteristics of the various types of containers are dictated to a great extent by their method of manufacture. The bodies of three-piece or fabricated aerosols are formed from small rectangular shaped pieces of tin-plate cut from large sheets or coils. First the side seam hooks are formed, following which the body is formed around a mandrel. The hooks are engaged and set by bumping. The bumped hooks are then soldered. The ends of the formed bodies are flanged and both ends attached by double seaming. The ends are formed from flat stock by drawing operations, the number depending on the design of the dies and contour of the finished unit. Following the drawing operations, the ends are curled and the sealing compound applied.

The drawn two-piece container is manufactured much like the domed ends as previously described, but with a great many additional drawing operations. Inside protective coatings must be sprayed on the bodies after formation. Since there is no soldered side seam, black plate may be used instead of tin plate for the can bodies.

ALUMINUM aerosol containers have generally been made by impact extrusion. The alloys selected for use depend on several factors. For the extruded body very pure and relatively soft aluminum is used. For end units attached by double seaming, use is made of stiffer alloys containing copper and magnesium and other additives. In impact extrusion a punch descends, forcing the aluminum in a ground slug back up over the die. The formed cylinder is then ejected, cut and trimmed, and the top formed. This procedure results in the manufacture of a one-piece aluminum can. A modification of this method is used to make the two-piece aluminum container. In this case a doughnut-shaped slug is used, and by means of proper configuration of the male and female dies, the one-inch opening is formed at the bottom of the die. The other end of the container is trimmed, flanged and a bottom end attached by double seaming.

There is still another type of metal container available that is a direct descendant of the high pressure bug bomb. These high pressure aerosol containers are furnished in 3, 4, 4¼ and 5 inch diameters and up to 12 inches in length. Common sizes used are a 3-inch diameter container with a capacity of about 75 cubic inches and a 4-inch diameter container with a capacity of about 132 cubic inches. These containers are furnished with the one-inch curled openings to take the standard one-inch valve mounting cups. The ends and bodies are joined by copper braising. The containers can be sprayed inside with protective coatings if necessary to protect the product from the metal of the container.

A rapidly growing segment of the aerosol industry uses glass and plastic containers. They can be furnished in a variety of styles and sizes, either of plain glass or of glass with an outside plastic coating. These coatings, which are vinyl plastics, may be tightly bonded to the glass or unbonded. In the latter case, the plastic can enlarge up to 400 to 500% when the bottle ruptures. In either case the plastic coating prevents dangerous projection of glass fragments when the bottle is accidentally broken. Other functions of the plastic coating are to prevent the glass from marring and scratching, to make the glass more break resistant and, by means of special materials in the coating, to protect the product from ultraviolet light. Glass containers are closed by rolling the skirt of the valve mounting cup over the bead at the opening of the container.

The newest type container material for aerosols is plastic. Materials used have been melamine, nylon and "Delrin" acetal resin plastic. Two basic methods of manufacture that may be used are injection molding and blow molding. In blow molding the container is formed in one piece followed by trimming of the top to form the valve opening. In injection molding, the container is manufactured in two pieces which must be joined by means of a metal ring or by the relatively new technique of spin welding. In this operation, a rapidly spinning member is brought into rubbing contact with the other member held stationary, producing frictional heat which serves to weld the parts together. Plastic containers can be externally decorated by silk screening or offset printing. Valves are attached the same as with the glass containers.

WITH the many types of aerosol containers available, how do you select the proper one for the job at hand? Among the many factors to be considered are strength, product compatibility and appearance. In

(*Continued on Page* 148)

Psst! there's nothing finer

Perfumes for AEROSOLS by Synfleur

SACHET SPRAYS

Lavender	DH-66
Cologne	DH-111
Cologne Bouquet	DH-117
Carnation	DH-131
Cedar Wood	DH-132

COLOGNES — PERFUMES

Cologne	DH-23
Bouquet	DH-28
Floral	DH-57
Lavender	DH-66
Lilac	DH-72
Floral Cologne	DH-83
French Oriental	DH-87
French Bouquet	DH-90
Cologne	DH-111
Jasmin Bouquet	DH-123
Mist Bouquet	DH-125
Mist Bouquet	DH-130
English Lavender	DH-133
Oriental Bouquet	DH-138
Sandalwood	DH-149

HOUSEHOLD & AIR FRESHENER SPRAYS

Cologne	DH-23
Siberian Pine	DH-29
Pine Wick Type	DH-30
Xmas Tree Pine	DH-31
Meadowsweet Bouquet	DH-34
Bouquet	DH-41
Lavender Bouquet	DH-45
Rose	DH-55
Orange Blossom	DH-59
New Mown Hay	DH-69
Spice	DH-74
Pine Virgin	DH-112
Cool Mint	DH-115
Spice Lavender Bouquet	DH-129
Carnation	DH-131
Medicinal	DH-139
Cool Pine	DH-144
Lavender Bouquet	DH-150

HAIR LACQUER PVP

Cologne	DH-23
Rose	DH-55
Orange Blossom	DH-59
Floral Bouquet	DH-79
Friench Oriental	DH-87
Oriental	DH-103
Cologne Bouquet	DH-117
Carnation	DH-131

SHAVE CREAMS, SHAMPOOS, SOAPS

Spice	DH-40
Lavender Bouquet	DH-44
Oriental Bouquet	DH-54
Rose	DH-55
Spicy Floral Bouquet	DH-56
Lilac	DH-72
Bay Rum	DH-89
Lemon	DH-94
Carnation	DH-131
English Lavender	DH-133
Lavender Bouquet	DH-150

PHARMACEUTICALS

Spice	DH-40
Medicinal	DH-70
Bay Rum	DH-89
Lemon	DH-94
Lilac Bouquet	DH-95
Jasmin Bouquet	DH-123
Floral Bouquet	DH-147

CREAMS, LOTIONS, COSMETICS

Cologne	DH-23
Spice	DH-40
Lavender Bouquet	DH-44
Oriental Bouquet	DH-54
Rose	DH-55
Orange Blossom	DH-59
Lavender	DH-66
Floral Bouquet	DH-76
Lemon	DH-94
Lily Muguet	DH-102
Lavender	DH-119
Carnation	DH-131
Cologne	DH-142
Floral Bouquet	DH-147

MOTH & INSECT SPRAYS

Siberian Pine	DH-29
Cedar Balsam Pine	DH-33
Violet	DH-42
Spicy Mint	DH-50
New Mown Hay	DH-69
Spice	DH-74
Para Odor	DH-122
Jasmin Bouquet	DH-123
Cedar	DH-127
Cedar Wood	DH-132
English Lavender	DH-133
Lavender Bouquet	DH-150

Synfleur offers this comprehensive line of perfumes *especially* developed for aerosols. Synfleur's ability to create the finest perfumes for special applications dates back to 1889. For this reason you can be confident that the perfumes listed here are absolutely perfect for your aerosols. High ranking in consumer preferences, Synfleur perfumes are sales-winning fragrances. You can be sure that they will keep your product sold, too.

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YOU put that ethyl alcohol drum there because U.S.I.'s reputation safeguards your own.

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news of pressurized packaging

Rubinfeld Visits Israel to Set Up Custom Aerosol Filler

DANIEL RUBINFELD, president of Sun Lac, Inc., Clark, N. J. custom filler, left Sept. 20 on a three-week trip to Israel. On his return he planned to attend the International Congress in Switzerland, and also to visit France for consultations with French cosmetic marketers.

The prime purpose of Mr. Rubinfeld's visit to Israel is to assist in the organization of an Israeli custom filling operation, a project undertaken at the request of the Israeli government to add to that country's growing industrialization. With the exception of a small-run line currently operated by Helene Curtis in that country, Mr. Rubinfeld told *Aerosol Age*, the new company will be the first aerosol filler in Israel. Exclusively a custom filler with no proprietary products of its own, the new company will use American-made equipment to fill various products using American valves, British cans, and American propellants. Mr. Rubinfeld, who will be a part owner of the company, said a major Israeli can supplier would soon begin production of aerosol cans there. He also revealed that negotiations are being carried on to make a U.S. valve in Israel under a license agreement.

The company will fill for the Israeli market (including some leading British and American brands) but will rely on the export market for much of its volume. Current plans call for the export of finished aerosol insecticides, cosmetics, household specialties, and a few pharmaceuticals to Greece, India, Turkey, and the African Countries. Because of a state of hostility between Israel and the Arab countries, there is no trade currently with those countries.

Nathaniel Breen, who was born in Israel, educated in the U.S., and is a veteran of the U.S. printing industry, will run the plant in Israel. Mr. Rubenfeld said that one purpose of his present trip is to select a plant site and make other final arrangements to insure that the company will begin production by the first of the year.

SCC Honors Raymond Reed

Raymond E. Reed, vice-president in charge of technical operations of the Toni Co., Chicago, has been chosen by the Society of Cosmetic Chemists to receive its 1961 Medal Award. He was honored for "his contributions to the birth and growth of the society; for his many inventions, in particular 16 patents which relate to hair waving; for his understanding of the cosmetic chemist's relationship with management and for the development of a research organization in his own company along the most mutually valuable and ethical lines."

The award will be presented at the society's annual meeting on Nov. 28 at the Hotel Biltmore in New York. Dr. Sophie L. Plechner, president of the society, will present the award and the eulogist will be Dr. Milton Harris, vice-president and director of research at Gillette, who has been associated with Mr. Reed for more than 20 years.

Mr. Reed is a pioneer in the development of machineless permanent waving. He also directed the original work on which the Toni permanent waving process was based and this later became the technical foundation for the entire home permanent waving industry.

■

Canada Can Duty Drops

Canada has reduced the tariff on tinplate aerosol containers from 22½ MFN to 7½%. A new Tariff regulation, dated July 1, reports that the decrease will apply to all metal cans but aluminum, on which at least two Canadian manufacturers are currently working.

■

Helene Curtis Realigns Sales

Helene Curtis Industries, Chicago marketer of hair sprays and other products, last month announced a number of shifts in its sales staff. Helene Curtis International S.A., a division, appointed Allison B. Hart, former director of international operations for the Mennen Co., as vice-president and general manager.

Raymond E. Liebler, executive assistant to the marketing director, was appointed director of marketing services. Marvin L. Hathaway will handle sales management for the West and George J. Schenk similar duties in the East.

■

Aerosol Co. Formed in N. Y.

A new company has been incorporated by Mildred S. Siegal, 124-26 Queens Boulevard, Kew Gardens 15, N. Y. to sell "chemicals, propellants, and synthetics packaged in aerosol containers." Called Aeropac Corp., it will have 200 shares of capital stock at no par value.

Madsen to Carbide Sales

The appointment of Blaine M. Madsen as "UCON" propellant sales representative was announced last month by Union Carbide Chemicals Co., Division of Union Carbide Corp., New York. He will handle sales to the aerosol industry for the eastern seaboard states.

During the past year, he has been a sales correspondent for the company's Industrial Chemicals group in New York City and technical service laboratory at Eastview near Tarrytown, N. Y. He received a bachelor of science degree with honors in chemical engineering from the University of Utah in 1957, and served as an officer in the U. S. Air Force in Formosa. A native of Salt Lake City, Utah, he now makes his home at 600 C Pelham Road, New Rochelle, N. Y.

•

American Aerosol Moves

American Aerosol, Inc., has moved to a new, larger plant at Front and Merion Streets, Bridgeport, Pa., phone number is BRoadway 9-4111.

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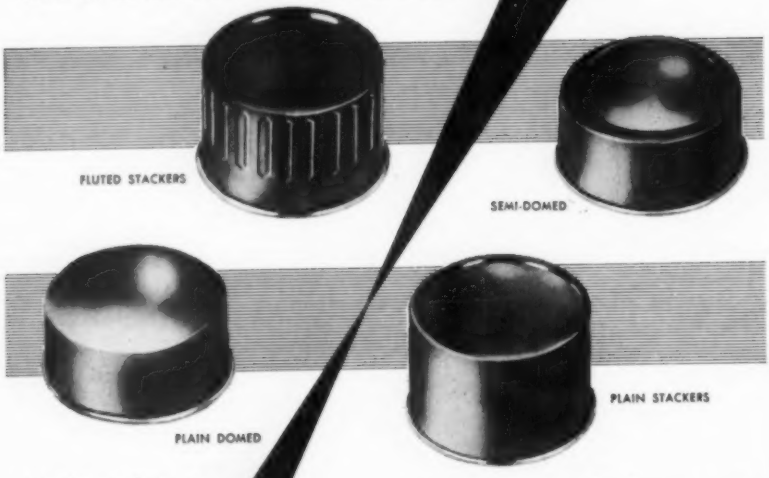

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Mich. State Elects Zahn

Lawrence H. Zahn, director of purchasing and package development at CIBA Pharmaceutical Products Inc., Summit, N. J., has been named a member of the Board of Trustees of the Packaging Foundation, Inc., Michigan State University.

Born in Hasbrouck Heights, N. J., Mr. Zahn was educated at Stevens Institute of Technology. He joined CIBA in 1944 and served for six months in 1957 as deputy director of the containers and packaging division of the Business Services Administration, Department of Commerce. He is president of the Packaging Institute, public relations chairman of the National Association of Purchasing Agents, North Jersey chapter; past chairman of the production and engineering section, Pharmaceutical Manufacturers Association; member of the Committee for Economic Development (CED), Industry Finance Committee; and a member of the curriculum advisory committee, School of Packaging, Michigan State University.

Michigan State is the only major University with a School of Packaging, which includes an aerosol laboratory.

•

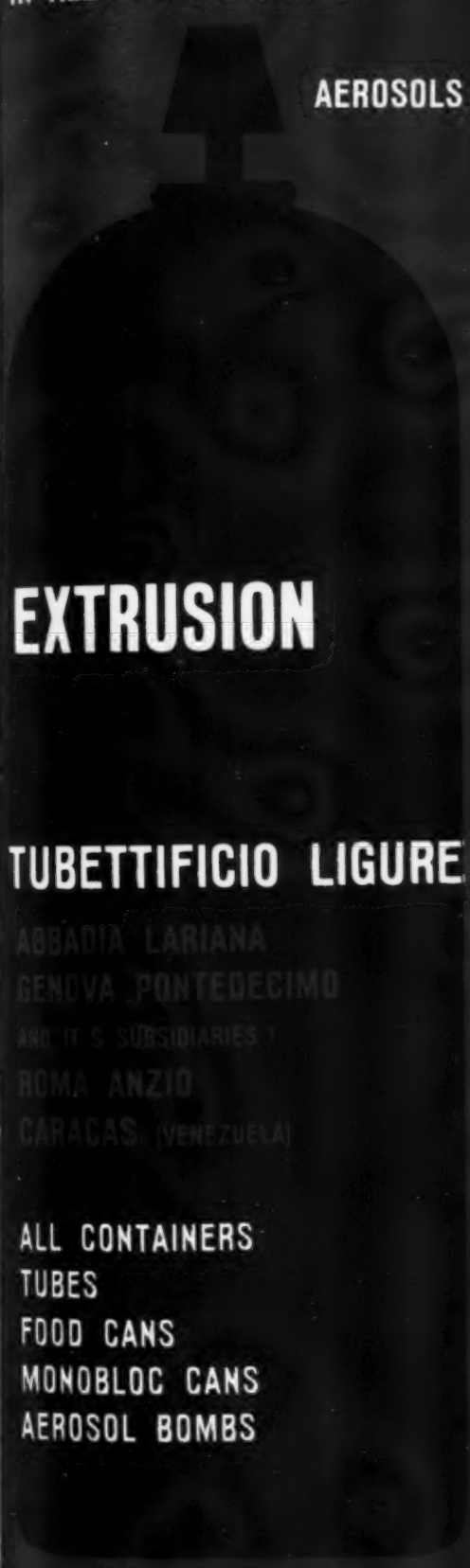
Philip Chaleyer Is Dead

Philip Chaleyer, former head of P. H. Chaleyer, Inc., New York producer of perfuming materials and essential oils, died Sept. 7 in Greenport, L. I., at the age of 66. A native of Lyons, France, and a veteran of the French Army in World War I, he was considered a leading creator of new perfumes.

After a long association with the Givaudan perfume interests in Switzerland, England, and the U. S., he formed his own company in New York in 1928. In 1953 he sold his company and since then he has served as a consultant to Hoffman-LaRoche and Rhodia, Inc. He was a member of the Essential Oil Association, the Society of French Perfumers, and the French Chamber of Commerce of the U. S. He had a reputation as a gourmet and connoisseur of French wines.

IN ALL THE COUNTRIES FOR ALL THE CONVENIENCES

AEROSOLS MONOBLOCS
ALUMINIUM



EXTRUSION

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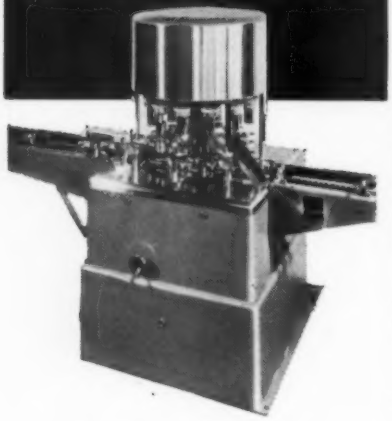
ABBADIA LARIANA
GENOVA PONTEDECIMO
AND IT'S SUBSIDIARIES
ROMA ANZIO
CARACAS (VENEZUELA)

ALL CONTAINERS
TUBES
FOOD CANS
MONOBLOC CANS
AEROSOL BOMBS

HIGH SPEED
CAPPING
INSERTING
SEALING
ASSEMBLING



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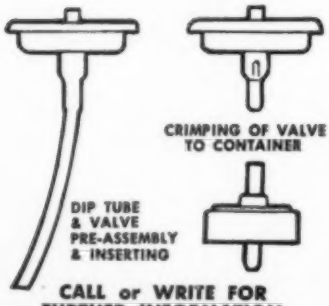
MACHINES
For All
AEROSOL PACKAGES
manual—semi-automatic—automatic
spray test attachment
speeds from 15-300 per min.

PLACING ACTUATOR BUTTONS



CALL or WRITE FOR FURTHER INFORMATION

PMC INDUSTRIES
293 Hudson St., Hackensack, N.J.
Diamond 2-3684

Laauwe Joins Puritan

The appointment of Robert H. Laauwe as New York regional sales manager has been announced by Puritan Aerosol Corp., Boston custom filler.

He received a B.S. degree in chemistry from Rutgers University and served as an officer in the U. S. Air Force during the Korean War. Prior to his new appointment he was associated with the Atlas Powder Co. as a technical representative. Most recently, he held a similar position with Polak's Frutal Works, Inc.

Mr. Laauwe is a member of The Salesmen's Association of the American Chemical Industry, Inc., Society of Cosmetic Chemists, Toilet Goods Association, American Association of Cereal Chemists and Society of American Perfumers. He resides with his wife and three children at 13 Smith Street, Waldwick, New Jersey.

•

TGA Warns of Tight Rules

The Toilet Goods Association has warned its members that the cosmetic industry may expect an upsurge of regulatory activity in the near future. Urging marketers to reassess the net contents markings in order to assure they are conspicuous enough, the association cautioned that state authorities in several states are becoming more active in the enforcement of weights and measures and food, drug, and cosmetic acts.

•

Bowaters Enters Aerosol Field

A new packaging acquisition has indirectly put Bowaters Ltd., a major world paper producer, into the aerosol container business. The British company has just acquired control of Europea S.p.A., Italian manufacturer of aluminum aerosol cans, collapsible tubes, and other packaging materials.

The latest acquisition is one of a series of such purchases made by Bowaters to strengthen its position in Continental Europe. Within the past three years, the company has purchased a corrugated box plant in Genoa, and corrugated box and flexible packaging materials plants in Brussels, Ghent, and Rheims. It also owns a large paper mill in France, pulp mills in France, Norway, and Sweden, and is currently engaged in the development of jointly owned tissue plants in Italy and Belgium.

•

CMCS Lists Program Outline

The Canadian Manufacturers of Chemical Specialties Association, Montreal, last month announced a program outline for its fourth annual meeting and conference, which is scheduled for Oct. 29-Nov. 1 at the Royal York Hotel, Toronto. The Aerosol Division has planned two separate formal sessions.

A general outline includes the following:

Monday, Oct. 30
- 9-12 Meeting of Board of Directors
- 2:30 p.m. Division Meeting of Aerosol and Insecticide Divisions

Tuesday, Oct. 31
- 9:30 General Session on Industrial Packaging
- 10:45 Forum on Aerosols
- 2:15 Forum on Pesticides
- 6:00 Suppliers' Open House

Wednesday, Nov. 1
- 9:30 General Meeting and Election of Officers
- 10:30 General Session on Federal and Provincial Taxation
- 2:15 Forum on Aerosols

•

National Plastics Is Sold

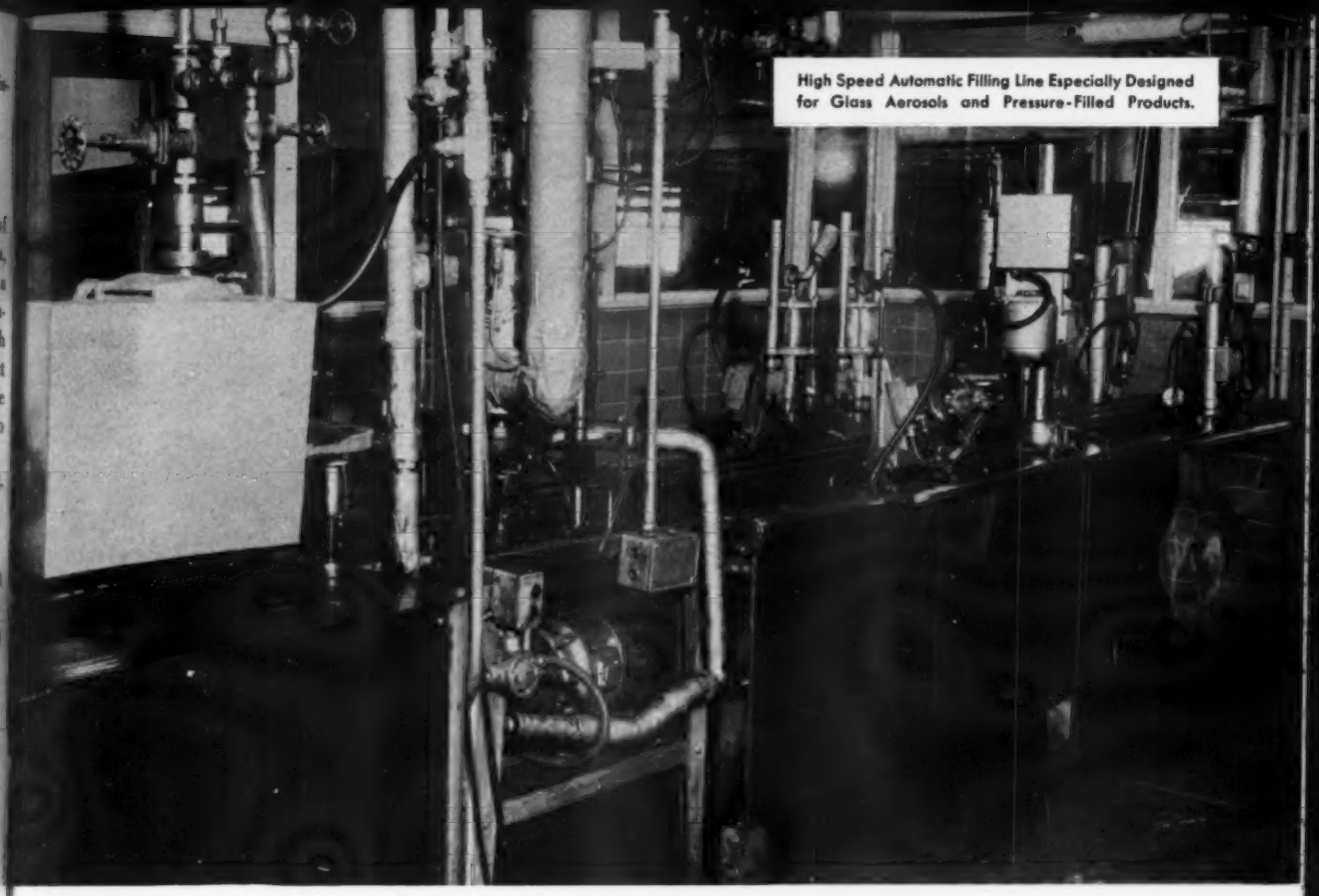
National Plastic Products Co., Odenton, Md., a pioneer in the development of plastic aerosol containers, last month was purchased by The Enjay Chemical Co., a division of the Humble Oil and Refining Co., New York, and J. P. Stevens & Co., New York textile manufacturer. Enjay and Stevens have formed a jointly owned company to operate National Plastics, which will be run under its present name and management.

•

Suter Heads Geigy Chemical

Charles A. Suter has been elected president of Geigy Chemical Corp., succeeding William F. Zipse, president of the firm since 1943. Marking his 58th year of service with Geigy, Mr. Zipse is now chairman of the Executive Committee.

Mr. Suter has completed ten years with J. R. Geigy, S.A. in Switzerland prior to joining the United States company. Rising to vice-president and director in 1943, he has been executive vice president since 1950.



High Speed Automatic Filling Line Especially Designed for Glass Aerosols and Pressure-Filled Products.

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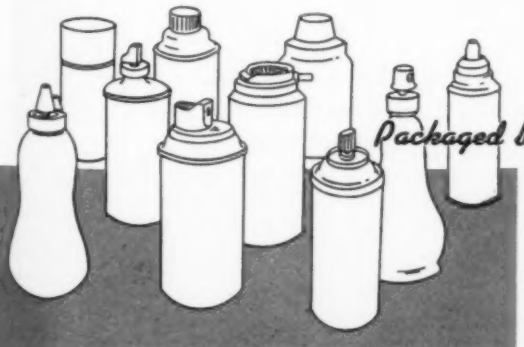
The business activities of Fluid Chemical Company, Inc., do not include the manufacture or sale of any product for our own account. Our sole product is contract liquid and aerosol filling service. Obviously, for this reason, there can be no conflict of interest between us and our customers.

FLUID has two of the largest and most modern contract liquid and aerosol filling plants in the United States, with seven filling lines. Ample formulating and storage facilities are also available, as required. Quality control of materials and of mixing and filling operations leaves no margin for error.

A completely equipped laboratory and skilled technical staff are capable of formulating your product for liquid, spray or foam dispensing. Deliveries are facilitated by an eight-car railroad siding, multiple shipping dock, complete warehousing and up-to-date mechanized handling facilities.



Write or telephone us for an early exploratory conference regarding your filling requirements.

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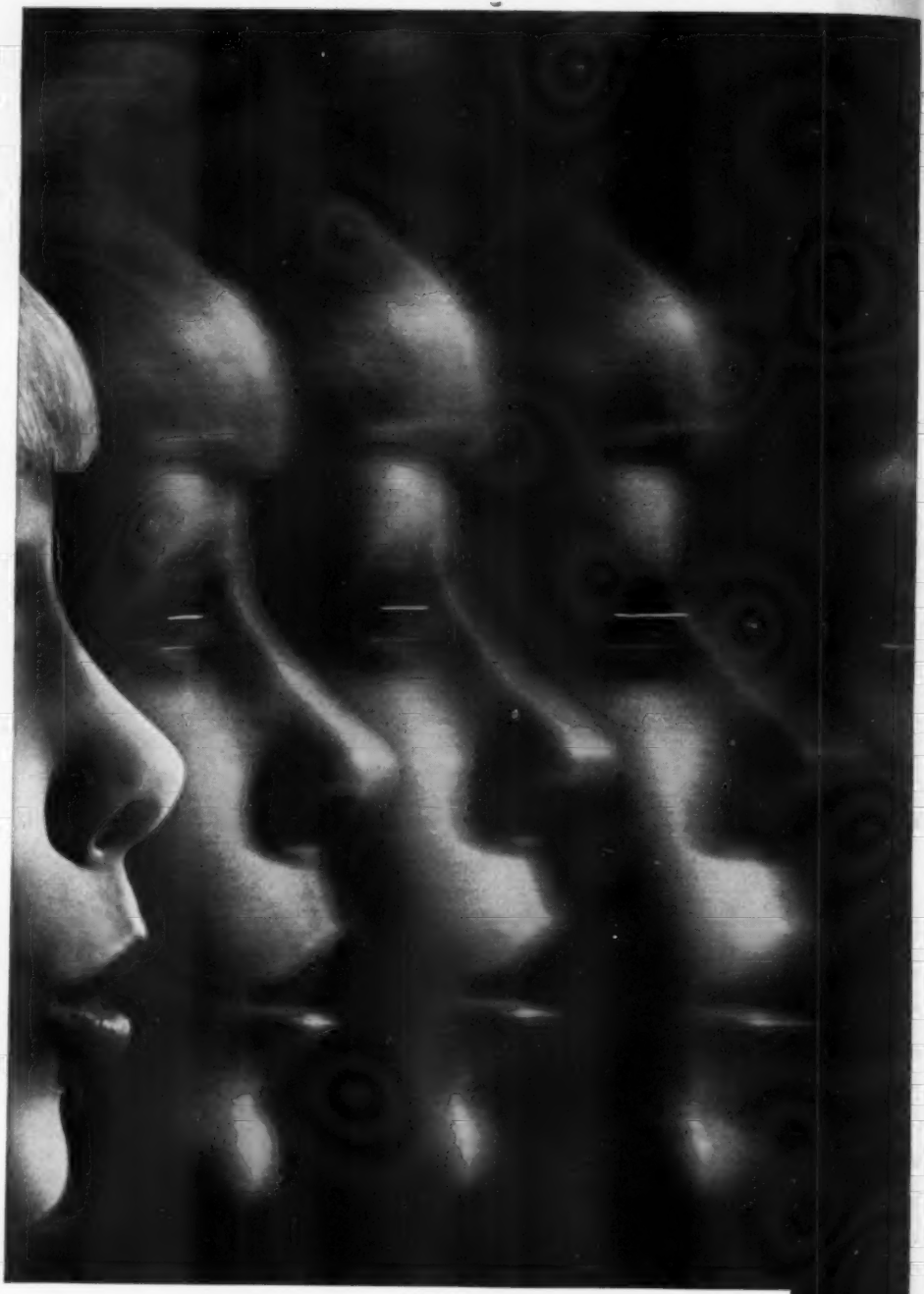

make things move with aerosols

'Arcton' goes almost everywhere. It's not only Britain's best-selling aerosol propellent, but the choice of aerosol fillers in Continental Europe and as far afield as South America, India, South Africa, Hong Kong, Australia and New Zealand. The reason is simple: for high quality and uniform performance the 'Arcton' range is unbeaten. There's an 'Arcton' chlorofluorohydrocarbon propellent for every need. Literature and further information are available on request.

ICI
GENERAL CHEMICALS DIVISION

Arcton PROPELLENTS

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AR.58

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I.C.I. (Belgium) S.A., 32 Rue Edmond Tollenaere, Brussels, 2.

CHILE
Cia Imperial de Industrias Quimicas de Chile S.A. Com. e Ind., Casilla 1357, Santiago.

COLOMBIA
John Simon & Cia. Limitada, Calle 14 No. 12-50, Oficina 815, Bogota.
Rodrigo Agudelo O, Edif. Garces, Avenida Colombia Calle 11, Oficina No. 303, Cali.
Walter Bridge & Co. Ltd., Edificio "Jenaro Gutierrez", Calle Colombia No. 47-28, Medellin.
Tracey & Companie S.A., Carrera 44, No. 36-29, Barranquilla.

GHANA
I.C.I. (Export) Ltd., P.O. Box 104, Tema.

HOLLAND
I.C.I. (Holland) N.V., Postbus 551, Rotterdam.

HONG KONG
I.C.I. (China) Ltd., P.O. Box 107.

INDIA
I.C.I. (India) Private Ltd., P.O. Box 182, Calcutta 1, India.

ITALY
Beghe & Chiapetta, Via Isonzo 25, Milan.

MALAYA
I.C.I. (Malaya) Ltd., P.O. Box 284, Kuala Lumpur.

MEXICO
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PAKISTAN
I.C.I. (Pakistan) Ltd., P.O. Box 4731, Karachi-2.

PANAMA
Agencias W. H. Doel S.A., Apartado 322, 29-15 Avenida 11.

PERU
Imperial Chemical Industries S.A. Peruana Com. e Ind., Casilla 1688, Lima.

PHILIPPINES
Wise & Co. Inc., P.O. Box 458, Manila.

SOUTH AFRICA
I.C.I. (South Africa) Ltd., P.O. Box 11270, Johannesburg.

SPAIN
Sociedad Anonima Azamon, Apartado 711, Paseo de la Castellana No. 20, Madrid, 1.

SWEDEN
Holger Andreasen, A/B, Storgatan 7, Orebro.

URUGUAY
Industrias Quimicas Uruguayas "Duperial", Avda. General Rondeau 2050, Montevideo.

VENEZUELA
H. Kern & Co., S.A., Apartado 1567, Edificio Kern, Av. Ppal. Los Cortijos de Lourdes, Caracas.

ICI GENERAL CHEMICALS DIVISION

Revlon Appoints Stricker

Sidney Stricker, Jr. has assumed duties in the newly created position of vice-president, marketing of Revlon International Corp., New York. He was formerly vice president and director of advertising of Schenley Industries.

Mr. Stricker is responsible for Revlon International advertising, display, packaging, marketing management and marketing services. He reports to William Heller, executive vice-president and general manager of Revlon International.

He attended Stanford University and graduated from the College of Law of the University of Cincinnati in 1948. He joined Schenley in 1948 as a sales representative and from 1952 to 1954 was national sales director of James E. Pepper Co., a subsidiary. He was named a vice-president of Schenley in 1956 and from 1957 until 1959 was president of I. W. Harper-Ancient Age Distillers Co., another Schenley subsidiary. In 1959 he became vice-president and corporate director of advertising for Schenley.

•

BAMA Seeks Aerosol Standards

The British Aerosol Manufacturers Association will be represented on a new technical committee set up by the British Standard Institution to prepare standards for aerosol containers. Two members of the BAMA will be on the technical committee.

The association has also been in consultation with the Ministry of Transport for advice on a suitable outer container for aerosols to be exported.

•

CO_2 Makers in Price Fixing Case

Four major manufacturers of carbon dioxide, which is one of the propellants used in aerosol food filling, have been charged by the Department of Justice with fixing prices, rigging bids, and allocating markets. A federal suit, filed in the Brooklyn, N. Y. Federal Court, listed Air Reduction Co., Olin Mathieson Chemical Corp., General Dynamics Corp., and Chemetron Corp. as defendants and eight other companies as co-conspirators. The companies were also charged with violating a 1952 consent decree (in a conspiracy case). The trial was scheduled to begin on Sept. 25.

•

Hanlon Joins AviSun Corp.

Joseph T. Hanlon, former advertising and sales promotion manager of Crown Cork & Seal Co., Phila-

Joseph T. Hanlon

delphia, has been appointed manager of advertising for AviSun Corp., Philadelphia, plastics producer. Mr. Hanlon was with Crown for 23 years and is a past president of the Baltimore chapter of the American Association of Industrial Advertisers and a member of the Eastern Industrial Advertising Association. He was assistant chairman of the Aerosol Publicity Committee of the CSMA's Aerosol Division and has been active in national trade associations in the packaging, brewing, and dairy industries.

AviSun Corp. is an equally-owned affiliate of American Viscose Corp. and Sun Oil Co., manufacturers and marketers of polypropylene resin, film and fiber. The company's new 100-million pound-per-year polypropylene polmer plant at New Castle, Del., began production last month.

•

Shulton Names Chemist

The appointment of Nathan Ziskin as a cosmetic chemist has been announced by Shulton, Inc., New York. Prior to joining Shulton, he was a research and development chemist for Yardley, and before that he held a similar position with Revlon.

Mr. Ziskin received his B.S. from Hunter College and has done graduate work at New York University, Columbia and St. John's University. He is a member of the Society of Cosmetic Chemists.

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PK-160

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Texas Company Wins Krylon Sales Award

Walter A. Frazier president, Hirsig-Frazier Co., Inc., 433 Belmont Ave., Dallas, Tex., accepts Krylon's 1961 Award for outstanding sales achievement, from James W. Bampton, president, Krylon, Inc., Norristown, Pa. The award is presented annually to the top Krylon sales representative organization in recognition of their sales initiative, performance, and cooperation. In the picture (left to right): Mr. Bampton Richard C. Newbold, vice president, sales, Mr. Frazier, and Elmore E. Kayser, Krylon vice president, advertising and promotion. In addition, each member of the Hirsig-Frazier organization received a pen and pencil set, engraved with his name and "1961 Krylon Sales Leader."

Air Reduction Names Merriman

R. H. Merriman has been appointed manager of the Gas Marketing Department, it was announced last month by Air Reduction Sales Co., New York. In his new post, he will direct the nationwide sale and distribution of Airco industrial gases. A graduate of Tufts College, he joined Airco in 1937 as a salesman in the metropolitan New York district. Except for Army service from 1943 through 1946, he continued in his position until 1949, when he was transferred to the Boston district. In 1954, Mr. Merriman became assistant manager of Airco's metropolitan New York district, and in 1958 was made manager of the Buffalo district. Earlier this year, he was appointed manager of the Philadelphia district, a post he held until his present promotion. He is a member of the American Welding Society.

•

Toni Salutes Merchandisers

The Toni Co., Chicago, has named four men to receive its Top Regional Merchandiser Award. This award recognizes the outstanding sales merchandiser in each of the Company's sales regions. The recipients are: in the Eastern Region, Hal Dodge of Portland, Maine, who becomes the first to earn the award two years in succession; in the Southern Region, Jack Doss of Huntington, West Virginia; in the Western Region, George Mikels of Portland, Oregon: and in the Central Region, Jim Madden of Chicago, Illinois.

Each of the men was cited for outstanding merchandising efforts at the retail level, including product promotion and display. The awards are based on effective use of merchandising techniques prescribed by the company and ingenuity in building eye-catching floor and counter merchandise displays." The company's top merchandisers will be presented with handsome inscribed trophies at special dinners held in their honor.

•

Impact Expands Can Line

Four new sizes of aluminum aerosol containers have been announced by Impact Container Corp., Alden, N. Y. A 21 and a 32-fluid-ounce container with a minimum bursting strength of 324 psi has been added. These three containers have a diameter of 2⅞" for easy handling and are designed to be readily adaptable to aerosol filling lines.

For the marketer in need of still larger sizes, a new 45 fluid ounce container with a minimum bursting pressure of 324 psi has been made available.

This gives the company a range of sizes from 3 fl. ounces up to 45 fl. ounces. The units are one-piece seamless all-aluminum and available lined or unlined, plain, painted or lithographed.

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Detroit, Mich.—Vermont 8-6475
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Minneapolis, Minn.—Federal 8-0761
Des Moines, Iowa—Atlantic 8-3218
Omaha, Neb.—Atlantic 1181
Oklahoma City, Okla.—Central 5-9447
Dallas, Texas—Hamilton 1-2168
San Antonio, Texas—Capital 7-6126
Los Angeles, Calif.—Capital 2-5101
San Francisco, Calif.—Glencourt 2-1011
Denver, Colo.—GE 3-3722
Portland, Ore.—Capital 3-1422
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T. C. Fenton Limited
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Foreign
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247 Park Ave., New York, N. Y.
Phone: Yukon 6-5280

A pianist strikes a single wrong note and there is musical discord. A perfume contains a scintilla too much of a fragrance accent and there is fragrance discord. This is the little difference that makes all the difference in the product you are selling. Thirty-eight years of working with perfume oils have taught Felton when so much is too much in creating fragrances. Let the man from Felton help you win more customers with a fragrance that pleases every time and all the time! Plan to get in touch with him today. Felton Chemical Company, Incorporated, 599 Johnson Ave., Brooklyn 37, N.Y.

Felton

Shulton Names Furutani

The appointment of George Furutani as manager, package development has been announced by Shulton, Inc., New York. He replaces Earl Engel, who was recently named general purchasing agent.

Mr. Furutani, a graduate of the University of Nebraska '43, joined Shulton in 1944 as a draftsman. In 1948 he became methods engineer and in 1953, production engineer. He has served as product engineer in package development since 1956.

•

CMCS Lists Contest Judges

Alan Jarvis, editor of *Canadian Art*, will be chairman of the judging committee for the first annual Canadian Aerosol Package contest sponsored by the Canadian Manufacturers of Chemical Specialties Association. Elaine Collett, director of the Chatelaine Institute, and John Nickell, editor of *Canadian Packaging*, are the other members of the committee.

The contest will select the best aerosol packages marketed in Canada prior to September 1st 1961. Entries will be divided into 15 categories, such as automotive, insecticides, room deodorants, food products and others. An award certificate will be presented to the winner in each category. In addition, a "best of show" award will be made to the category winner which in the judges' opinion is the best example of effective aerosol packaging.

Any aerosol brand owner or marketer in Canada was eligible to enter. Entries closed Sept. 15th, with awards to be presented at the CMCS annual convention, October 30th to November 1st, Royal York Hotel, Toronto, Ontario.

In addition to being editor of *Canadian Art*, Mr. Jarvis is the National Director for the Canadian Conference of the Arts. He writes a weekly syndicated newspaper column and has his own weekly television program, "The Things We See", on the independent network. He is also a portrait sculptor and head of his own industrial design company, Alan Jarvis Associates.

John N. Nickell was appointed editor of *Canadian Packaging* in 1960. Previous to this appointment, he was editor of another Maclean-Hunter publication, *Materials Handling in Canada*. He is a member of the Packaging Association of Canada, the National Institute of Packaging Engineers of Washington, D. C., the American Materials Handling Society, Inc., the Technical Association of the Pulp and Paper Industry, and the Canadian Public Relations Society.

•

Matchabelli Appoints Thomas

Prince Matchabelli, Inc., New York, has named Tedd Thomas to the position of sales promotion manager. He had been an assistant in the company's merchandising department.

•

Bolster Joins Elizabeth Arden

Elizabeth Arden, Inc., New York, has announced the appointment of John A. Bolster as sales promotion manager. He formerly held a similar post with *McCall's* magazine.

Illinois Bronze Appoints Dodge

Harlan B. Dodge has been appointed general manager of Illinois Bronze Powder Co., Chicago. He recently resigned as director of manufacturing for Weber Costello Co., Chicago Heights, Ill. His responsibilities at Illinois Bronze will include all phases of manufacturing and other operations except sales.

One of the oldest paint manufacturers in Chicago, Illinois Bronze was one of the originators of aerosol paints. During over 70 years in the industry, it has developed many paint specialties for industrial and consumer use. Its main offices and plant are located at 2023 South Clark St., Chicago.

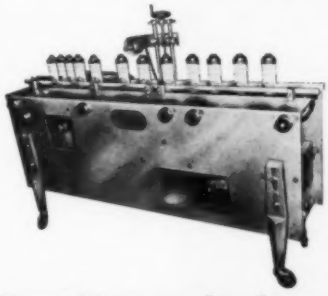
•

Fornero Joins Wrisley

The Allen B. Wrisley Co., Chicago, has appointed George M. Fornero to its private brand sales staff. He was formerly general sales manager of Patricia Stevens Cosmetics Co., Chicago, and prior to that was a regional sales manager with Continental Filling Corp., Danville, major aerosol custom filler.

KIWI®

AEROSOL CODE DATING EQUIPMENT that has *earned* industry acceptance



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With work table area.

For automatic code dating of concave bottoms of aerosol cans.

Will mark top, bottom, or both at the same time.

No change parts needed

Something new has been added . . .

NEW KIWI® AUTOMATIC CODE DATER

Mounts on Conveyor Line or Case Sealer

Uses ink reservoir system. One internal inking with poly squeeze bottle lasts from two to four weeks, or 25,000 to 150,000 impressions, depending upon the amount of printing required.

Average cost of ink for one code dater for one year is about $3.00

KIWI® sponge inkers last one to three years and can be repadded at very low cost.

Right or left hand mounting.

Also . . . case printers for consecutive numbering or printing information on cases

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More and more prominent Cosmetic, Toiletry and Pharmaceutical marketers are capitalizing on Metal Fab's specialized and diversified facilities to produce CLOSURES with popular appeal, lower unit cost, and to exacting specifications.

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Equipped with cold- and pressure-filling lines

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Send check and order to
Aerosol Age, Book Department
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Good Design Said to Capture Attention on Market Shelf

A NEW design never before marketed or promoted may be recognized more promptly by the consumer than a highly familiar one, according to the Center for Research in Marketing, Peekskill, N. Y. "In a series of studies conducted in our Perception Laboratories," claims William Capitman, president of the research organization, "it has been found that when a good new design is presented to the consumer, she recognizes it instantly and in many cases *much more quickly* than she does the old, familiar package which she has seen for years."

Because we are in a period of marketing where caution and conservatism are dominant, many advertisers are leary of bold new packaging. Yet, they may be erring seriously since the competitive new package is, in many cases, actually more recognizable and visible to the shopper making a split second purchase decision."

Mr. Capitman said that many tests of new packaging against old run in the center's Perception Laboratories had shown that "the familiar is not necessarily more readily recognized than the unfamiliar."

"For example," he said, "using a series of tests based on subliminal perception, the Center found that a new design for a regional coffee package was far more likely to be seen and to be identified by brand name, than the current design with which every one there had grown up and had known for his entire life." Using the same test methods, the Perception Laboratories found that a new design for a cosmetic package, different in every respect as to shape, logotype, basic concept, color—was just as quickly seen as the old package.

"When such a familiar trademark and trade name are presented in a good new design they stand out dramatically against competitive new packages," Mr. Capitman commented. "Of course," he added, "this depends entirely on the correctness of the new design. For it is the structure of the design among other designs that determines whether a package will be seen, and once seen whether the brand name and product connotations will be projected.

"Simply being new does not insure recognition, even when the old design elements are retained in the new setting. The new package must also convey the proper connotations for best promotion of the product, and must convey them in such a manner that the product stands out as unique in its field. But no manufacturer today can afford to stay with the familiar because of fear of losing a franchise. There is too great danger that his package will be so familiar it won't be seen at all, while a competitor may come along with an equally familiar trademark or name in a new design which will capture the consumer's attention at once."

Stricker to New Revlon Post

Revlon International, New York subsidiary of Revlon, has appointed Sidney Stricker, Jr. to the newly-created position of marketing vice-president. He was formerly vice-president and director of advertising for Schenley Industries.

•

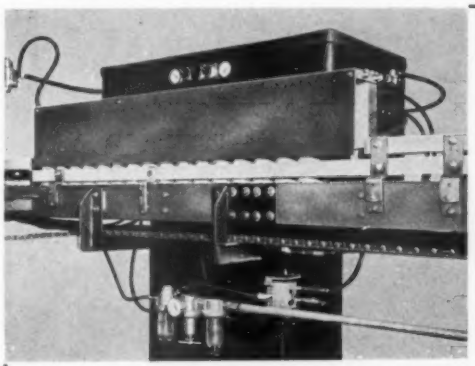
Torrens Joins Jergens Co.

John R. Torrens, former vice-president and general manager of Helene Curtis Industries International, has joined Andrew Jergens Co. as vice-president in charge of international operations.

•

New Plastic Container Maker

A new company has been incorporated in Los Angeles County, California to manufacture plastic pressure containers. Called Airmold Corp., it was organized by James A. Flanagan and R. Virgil Allen of 453 S. Spring Ave., Los Angeles.



GAYLE V

16 Head Positive Gassing *and* Shaking Machine

- **Adaptable for several sized containers in minutes, up to 60 containers per minute, depending on gassing cycle.**
- **This machine may be installed next to most existing conveyors.**
- **Times itself into production automatically.**
- **Balanced rotary shaking action.**
- **All parts protected from oxidation.**
- **Any timing cycle can be made with a simple twist.**
- **Regardless of voltages used — control circuit is 110-volt for operator protection.**

For further information, write:

GAYLE ENGINEERING COMPANY

2443 East 27th Street Phone: LUdlow 3-4223 Los Angeles 58, Calif.

An invitation to opportunity in the aerosol field

JOIN THE CSMA

The Chemical Specialties Manufacturers Association is an active organization of people and companies with the same business interests and objectives as you. It is dedicated to producing better products, expanded markets and improved selling methods for aerosols in all fields including:

- **Cosmetics**
- **Pharmaceuticals**
- **Foods**
- **Insecticides**
- **Paint**
- **Room Deodorants**
- **Other household pressurized products and related chemical specialties**

As a member, you can help further these objectives because it's a hard working organization — and reap even greater benefits from the combined efforts of total CSMA membership.

Scientific Research. The CSMA actually establishes laboratory methods for testing.

Legislative Help. Of utmost importance today, the CSMA alerts its members to pending legislation that may affect them. They also work closely with the Federal and State governments on standard specifications . . . labeling . . . and the development of model bills.

Market Help. The CSMA keeps its members abreast of the markets and its trends through an annual survey of production in each of its six divisions.

Why not join forces with those whose objectives parallel your own? For more information about the CSMA and how you can join, write: Chemical Specialties Manufacturers Association, 50 East 41st Street, New York 17, N. Y.

CHEMICAL SPECIALTIES MANUFACTURERS ASSOCIATION, INC.

AEROSOL DIVISION

Three Major Drug Makers Hit by Antitrust Charges

Three major U.S. drug firms and their chief executives last month pleaded not guilty in New York Federal Court to a Federal criminal antitrust indictment charging rigged prices and a monopoly. The three companies are Charles Pfizer & Co., American Cyanamid Co., and Bristol-Myers Co. They were charged in an action with maintaining, since 1953, unreasonably high and non-competitive prices; monopolizing manufacture, sale and distribution of three drugs ("Aureomycin", "Terramycin" and tetracycline); and a conspiracy to control the patent on tetracycline.

Named as defendants in the indictment were Wilbur G. Malcolm, board chairman of Cyanamid; John E. McKeen, president of Pfizer; and Frederic N. Schwartz, president of Bristol-Myers. Olin Mathieson Chemical Corp. and The Upjohn Co. were named as co-conspirators, but not defendants.

The three-count indictment does not charge price fixing, but maintenance of unreasonably high prices. It was slightly unusual in government procedure because the Justice Department indictment was handed down at the very time the matter was being tackled by the Federal Trade Commission.

Shulton Promotes Engel

Earl Engel has been appointed general purchasing agent of Shulton, Inc., Clifton, N. J. to succeed the late F. W. Siemons. Mr. Engel joined the engineering department of Shulton in 1946 and in 1949 became packaging engineer. In 1953 he was made packaging engineer and was named manager, package department, in 1957. He will be headquartered at the Shulton plant and offices in Clifton, N. J.

•

Gen. Chem. Names Six in Sales

The General Chemical Division of Allied Chemical Corp., New York has announced the appointment of six regional sales office managers and five assistant managers. The new sales managers and their offices are:

Arthur H. Baker, New York Metropolitan; Albert B. Connelly, Houston; Harold E. Donaldson, St. Louis; William P. Doyle, Buffalo; Edmund R. Lett, Birmingham; and Wesley G. Webster, Denver.

The new assistant sales managers and their offices are:

Lester I. Adams, New York Metropolitan; Joseph M. Byouk, Chicago; Stephen J. Muller, Los Angeles; Richard J. Regan, Philadelphia; and James E. Strader, Chicago.

A major operating division of Allied, General Chemical has 28 sales offices across the country servicing customers for its broad line of industrial and agricultural chemicals, Baker & Adamson reagent and fine chemicals and "Genetron" aerosol propellants.

•

Gelsthorpe Is New Colgate VP

The appointment of Edward Gelsthorpe as vice president and sales manager of its Toilet Articles Division has been announced by the Colgate-Palmolive Co., New York. He will be responsible for directing the field sales and distribution activities of all of the Division's products.

Mr. Gelsthorpe has had a long and successful career in marketing, including many years with Bristol-Myers, Inc. which he joined in 1950 as assistant to the vice president in charge of product development. He later rose to positions of increasing responsibility, including vice-president and general sales manager of Bristol-Myers' Products Division and eventually vice-president and director of marketing.

•

Hyatt Heads GAF Marketing

The Antara Chemicals Division of General Aniline & Film Corp., New York, supplier of polyvinyl-pyrollidone to the aerosol industry, has named Robert C. Hyatt to the post of director of marketing. He had been director of marketing for the company's Collway Pigments Division.

New Fragrances and Neutral Scents for Aerosol Products are Continually Developed in Our Modern Aerosol Laboratory

Alpine AROMATICS

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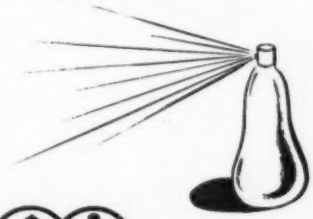

ALPINE AROMATICS

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LIBERTY 8-7202

A 3

Paint Product Wins Award

An aerosol spray paint product was named the "Best Non-Automotive Chemical" product at the National Automotive Accessories-Parts-Equipment Show held recently in Las Vegas, Nevada. The 1961 NAAPE Award went to Plasti-Kote's new "Target" line of push button spray paints introduced early this year. The new product offers an exclusive "ACCU-SPRAY" head, designed to give a more accurate and positive directional spray and is claimed to be the fastest drying spray paint ever offered to the consumer. The Target line also features a new 16 oz. package.

Elias Shapiro, executive vice-president, and Harold Luce, sales manager, accepted the award in behalf of the company, which is one of the largest aerosol spray paint manufacturers in the United States.

•

Pope to Fritzsche Post

Lonnie H. Pope has been appointed sales representatives for the newly established Dallas area by Fritzsche Brothers, Inc., New York supplier of essential oils, aromatic chemicals, and fragrances and flavor compositions. He is a graduate of Mercer University of Macon, Ga., with a B.A. Degree in chemistry. He is also a former employee of Fritzsche, having been with the company for over a year as an analytical chemist.

Colgate Buys Reefer-Galler

Reefer-Galler, Inc., New York, marketer of moth-control products and insecticides, has been purchased by Colgate-Palmolive Co. for a price estimated to be in the vicinity of $1.5 million in cash. Reefer-Galler is reported to have had sales last year of $2.5 million, most of it to national department stores. Among its products are "No-Moth," "Sno-White" and "Sla" brands of aerosol and conventional products. Reefer-Galler will operate as a Colgate subsidiary under the direction of its Associated Products Division.

•

Course on Flavor Materials

To meet the needs of the creative flavor chemist, the Rutgers University Newark Extension Center, Newark, N. J. this fall will introduce an evening course in flavor materials. In announcing this addition to its perfumery and essential oils program, George A. Tapper, director of the Newark Extension Center, reported the need to discover, create, and compound flavors for our many foods and beverages promoted the demand for the new course. According to him, the lectures will provide a thorough description of flavor materials and flavor compounding as well as an opportunity to experiment with new and hitherto unexploited flavor materials.

Steffen Arctander, noted perfumer associated with International Flavors and Fragrances, New York, will be the class instructor with certain lectures handled by guest experts. The course is scheduled to meet from 6:30 to 8:30 p.m. on Wednesdays beginning Oct. 4 for ten weeks. It will cover available flavor materials; natural, processed, concentrated essential oils, synthetics, fruits, and abstracts; formulas; adjustment of flavor for various purposes; and the influence of temperature, sugar, salt, and bitterness upon flavors.

Detailed information regarding the flavor course may be secured at the office of the Rutgers Newark Extension Center, 601 Broad Street, Newark, or by calling MItchell 3-1766.

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Serving Aerosol Manufacturers the World Over.

LUDWIG CLOSURES

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PFW Names Canadian Agent

Polak's Frutal Works, Inc., Middletown, N. Y. supplier of essential oils and perfume bases, last month announced the appointment of Natural Products Corp. as its sales agent in all of the provinces of Canada except British Columbia. A. J. de Jong, PFW's sales representative in Canada, will continue in the same capacity working closely with Natural Products' staff.

Natural Products maintains warehousing and forwarding facilities in both Toronto and Montreal. Its headquarters is at P.O. Box 392, Station "O", Montreal 9, Que.

•

Poison Control Centers on Rise

The number of poison control centers affiliated with the National Clearinghouse for Poison Control Centers rose to a new high of 460 as of July 1, Surgeon General Luther L. Terry of the U. S. Public Health Service announced last month. The first such center was established in 1953, and the effort to establish such centers was coordinated within the Public Health Service in 1957.

With the cooperation of some 200 major producers of drugs and household products, the centers maintain records of ingredients of trade-name products plus antidotes. This information is available to physicians by telephone day or night.

•

McLaughlin to Vick Chemical

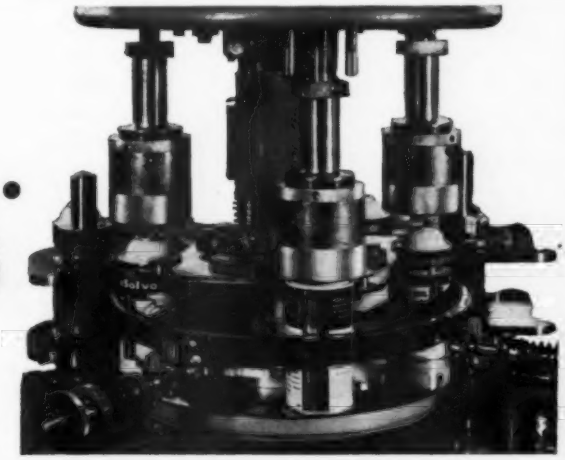
John T. McLaughlin, president of the Mead Johnson Laboratories Division of Mead Johnson & Co., has been named president and general manager of the Vick Chemical Co. Division of Richardson-Merrell, Inc., New York. He succeeds Richard D. Waters, who was recently named executive vice-president of Richardson-Merrell. Ernest P. Zobian, vice-president of the Vick Division, was appointed executive vice-president.

Fogarty Heads ConCan

Thomas C. Fogarty, president of Continental Can Co., New York, has been elected chief executive officer of the company. He replaces Gen. Lucius D. Clay, who last month was appointed President Kennedy's personal representative to Berlin. Gen. Clay continues as Continental Can's chairman on uncompensated leave of absence for the duration of his government assigment.

Mr. Fogarty is a 1922 graduate from Harvard University and also attended the Harvard Graduate School of Business Administration. He joined Continental Can in 1929 and was elected vice-president in 1946, executive vice-president of the Metal Division in 1950, and president in 1956. He is also a director of the American Sugar Refining Co., Irving Trust Co., A. O. Smith Corp., and the U. S. Brewers Association.

CRIMPING OVER 1,000,000 CANS... and going STRONG



A recent customer reports the new CAPEM Automatic Rotary Crimper for Aerosol Valves delivers more than a million cans without a sign of jaw or plunger wear or misalignment. The crimper assembly holds well within crimping tolerance throughout the entire run.

The machine features a completely mechanical operation . . . no *air* required. During the crimping operation, a mechanical plunger drops over the valve and expands 6 precision tooled segments for crimping contact. When the plunger retracts, the segments snap back into position for positive release of the can *before top pressure is released.* The crimping operation is further protected by Consolidated's built-in accuracy of container handling and centering, with automatic pre-seating of unseated valves.

Crimper jaws are adjustable to provide depth of crimp desired. The machine, with adjustable turret, can be easily set for proper crimp height and top pressure.

The Model C-4-SC, 4-spindle operation shown, will handle any size can with standard 1" valve at speeds of 110 to 120 containers a minute. Faster six and eight spindle machines are available.

For complete information, write Sales Manager

CONSOLIDATED PACKAGING MACHINERY CORPORATION

A Subsidiary of International Paper Company

1400 WEST AVENUE • • BUFFALO 13, NEW YORK

SEE THIS NEW **CAPEM** AUTOMATIC ROTARY CRIMPER AT THE PACKAGING SHOW NOVEMBER 7 to 10 DETROIT

½ MILLION AEROSOL CAN CRIMPS WITHOUT ANY SIGNS OF WEAR... anywhere

Model No. APCR1 Crimper Assembly for 1" Can Valves

Never before has an aerosol valve assembly crimping collet received such acclaim for performance and dependability. "Over 500,000 crimps so far," a leading product packager states, "and still going strong. No signs of wear anywhere on the plungers or crimpers." You can now avail yourself of a fine, reliable 1" crimping collet at low cost... in a new exclusive advanced design that has proved itself on the assembly line.

- no "hang-ups," no "pick-ups," no down-time for adjustments
- greater area of contact for maximum sealing
- far out-performs any other crimper in valve assembly speed and continuous operation
- thoroughly engineered and machined like finest precision tools
- made of specially selected materials properly heat treated, hardened and ground

If you are not using Royal Aerosol Crimpers, it is costing you money. Remember—we have never had a crimper returned—a fine testimonial of complete user satisfaction!

10-DAY FREE TRIAL
We are so confident of the quality and performance of this line tested crimper that we will gladly send you a unit prepaid for 10-day free trial. Convince yourself in your own plant.

Write or Call Today for Full Details and Literature

A complete line of Aerosol Crimping Collets, Valve Hub Crimpers and Dip Tube Feed Collets

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For A Better Crimp In Your Business

Woolard Heads Matchabelli

Paul P. Woolard, former executive vice-president, has just been elected President of Prince Matchabelli Inc., New York subsidiary of Chesebrough-Pond's Inc. Jerome A. Straka, who has been president, will continue as board chairman and chief executive officer.

Mr. Woolard assumed his new duties as of Oct. 1st. As president, he will be responsible for the "Prince Matchabelli" product line, "Aziza" eye cosmetics, "Polyderm" treatment products, "Black Watch" men's toiletries, and "Simonetta" perfume.

He joined Prince Matchabelli as a salesman in 1950 and five years later was named general sales manager. He became vice-president in charge of sales in 1957, vice-president in charge of marketing in 1959, and in December of last year was promoted to executive vice president and named as a director of the subsidiary. He is a Columbia University graduate and an Army Air Force veteran.

•

Bishop, Lanolin Plus to Merge

Hazel Bishop, Inc., New York, and Lanolin Plus, Inc., agreed to a merger which would provide that Hazel Bishop, smaller of the two companies, would be the surviving corporation. The merger has already been agreed to by the directors of both companies, pending stockholder approval.

Under the initial agreement Morton Edell, Lanolin Plus president, will be chief executive of the merged corporation and Lanolin Plus will provide seven of the nine directors. Since 1956, Hazel Bishop's sales have declined steadily, and for the year ending Oct. 31, 1960 the firm's net loss was $436,930 for $7,889,113 in sales. During the fiscal period ending June 30, 1961, Lanolin Plus recorded a profit of $516,424 for $14,000,324 in sales. A high Lanolin Plus executive admitted that one major reason for making Hazel Bishop the surviving corporation would be to take advantage of Bishop's tax-loss.

The merger agreement was preceded by a major reshuffling of Bishop's directors and executives. Four directors, David B. Charney, Charles Maybruck, George Ruppel, and Julius Epstein resigned and were replaced by Raymond Meffen and Matthew Middleton, both company vice-presidents; Henry L. Sondheim, president of U. S. Teleservice Corp., and Milton E. Mermelstein, an attorney. The new board then elected Raymond Spector, board chairman and chief executive officer of the company from 1950 to 1954, new board chairman to replace Daniel Van Dyk.

•

"Freon" Man Is Consultant

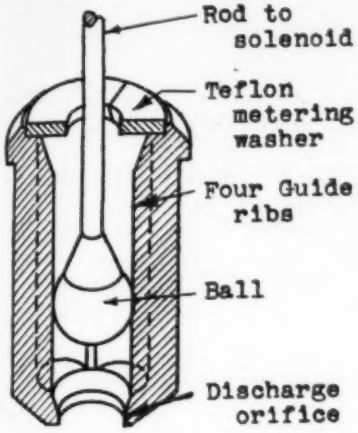
A refrigeration and low temperature consulting and manufacturing service, Cryo-Engineering Co., has been established in West Chester, Pa., by Donald J. Barday, former DuPont "Freon" Products Division refrigeration engineer. The co-author and technical editor of the "Freon" Products Division's service manual on "Freon" in refrigeration systems, Mr. Barday's organization will offer a complete design service for manufacturers, contractors and industrial users of refrigeration, solvent purification, recovery systems and vacuum apparatus.

Cryo-Engineering Co. will manufacture low temperature test equipment, will supervise the procurement and installation of equipment and serve as consulting engineers on proposed and existing installations of clients' equipment. The company developed a method for eliminating the loss of solvent vapor, particularly the more volatile "Freon," from metal and fabric cleaning machines.

A native of Boulder, Colorado, Mr. Barday obtained his bachelor of science degree in mechanical engineering at the University of Colorado. He owned and operated the Arapahoe Refrigeration Co. in Boulder, Colo., from 1946 until mid 1949 when he became a student instructor in air conditioning at the University of Colorado. From 1953 until he joined the DuPont's "Freon" Products Division, mid 1955, he was associated with the radiation laboratory of the University of California at Livermore, Calif., as a refrigeration and cryogenics engineer. During five years at DuPont, he was assigned to laboratory and technical field activity in connection with the company's "Freon" refrigerants.

equipment processes bulletins

Kurek Offers Filling Nozzle



A versatile filling nozzle, designed for the timed orifice type filler such as the Mojonnier, has been perfected by the Kurek Engineering Co., 5201B University Ave., Madison 5, Wisc. The ball is guided to its seat by means of four guide ribs resulting in self-lapping of the ball and seat, higher accuracy, no side-squirt, no drip, and sharp cut-off.

The split one-piece Teflon metering washer is easily installed around the rod and provides any desired rate of flow by the size of the inside diameter. Internal metering results in gentle flow, permitting filling without splash-back. Nozzles with smaller discharge orifices are available for bottle filling.

•

Emergency Fountain for Labs

A new Swing-down emergency eye, nose and mouthwash fountain for laboratories and plants has been developed by Logan Emergency Showers, Inc., P.O. Box 111, Glendale, Calif. It is designed for first-aid for facial contamination and the effects of acids, chemicals, caustics, bacteriological and other foreign matter.

Spray bars in 'stand-by" position are up and out of the way. The swing-down principle of spray bars actuates a quick opening valve and releases an instantaneous flow of water 8 inches by 8 inches, bathing the entire face at close to negative pressure.

All piping, spray bars and functional parts are constructed of red brass or copper, with exposed parts chrome plated and a stainless steel back splash panel, protective hood and housing. It is available with bottom, right or left water supply.

•

Ludwig Expands Cap Line

Ludwig Closure Co., Brooklyn, N. Y., has announced an expansion of its cap line to include a new closure for the American Can "Snap-Lock" can in the "202" size. The new Ludwig cap is a one-piece unit shaped to give what the company describes as "a superior fit to any cap on the market." The fit, the company says, is due to a new manufacturing method which assures a positive hold to the can with wide tolerances. It can be supplied in any color or private decoration.

The same announcement pointed out that Ludwig now manufactures a complete line of standard aerosol cover caps.

•

Automatic Case Sealer

A new automatic case sealer which can handle cases from 3 to 49 inches high in a broad variety of widths and lengths has been announced by General Corrugated Machinery Co., Palisades Park, N. J. It automatically seals intermixed size cases both top and bottom, at a rate of up to 12 per minute. The unit will reportedly provide substantial cost savings for companies with a volume of 1000 cases or more per day, particularly where case size variety has been a problem.

New Aerosol Crimp Gauge

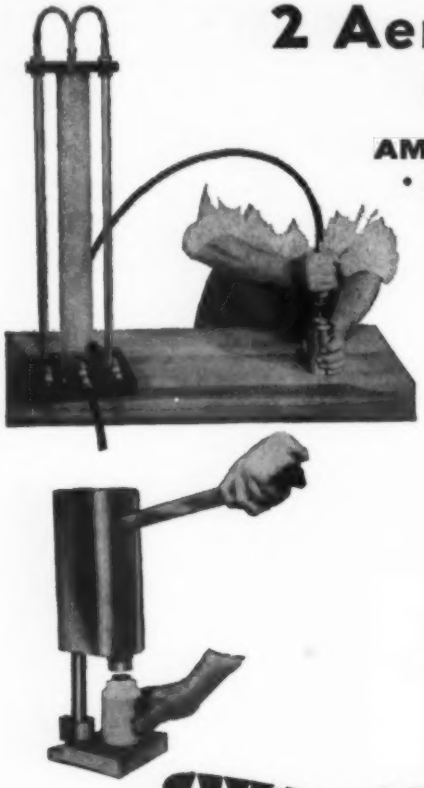
A new crimping gauge, specifically designed for the aerosol industry, has recently been placed on the market by Pressure Pak, Inc., West Palm Beach, Fla., a subsidiary of the American International Development Corp. Named the "Quik Check", the new instrument is designed for laboratory or production use in determining the internal diameter of valves having a 1" cup. The gauge is set to give an instant reading from 1.060 to 1.075 inches.

The unit is 4 inches long and 1¼ inches in width. There is a standardizing adjustment on one leg of the unit. The gauge is said to be ideal for quick determinations of internal crimping diameters without the necessity of using calipers. Each unit is supplied with a vest pocket holder. Also included is a standard checking tool set at 1.065 for calibrating the gauge.

The "Quik Check" Gauge was originally developed as an accessory to the Pressure Pak "1000-M" aerosol loading unit.

2 Aerosol Production Boosters

FOR SMALL LOT AND LABORATORY WORK



AMCO PRESSURE BURETTE

- All operating control valves conveniently located at table height on base of Pressure Burette.
- Hand operated injector valve with easily changed adapters for use with most of the popular makes of aerosol valves.
- Shatter-proof clear plastic shield that encloses Burette tube, provides maximum protection for operator.
- 1000 cc capacity.
- Compact . . . total height is 30".
- Calibrated in 5 cc graduations.
- Heavy, solid aluminum base prevents toppling.
- Available for use with nitrogen at slight extra cost.

AMCO HAND CRIMPER

- Manually operated, short stroke, and multiplied leverage lessen operator fatigue.
- Single stroke action locates can, seats valve in position, and crimps.
- Keyway guided head keeps crimper jaws centrally aligned for all can heights.
- Completely enclosed for safety . . . no moving parts exposed.
- Light, compact, durable unit weighs 16 lbs.

AMCO **AEROSOL MACHINERY CO.**

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AEROSOLS:
Science and Technology

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- 562 pages—$22.50
- Profusely illustrated
- Contains scores of formulations

Send check and order to
Aerosol Age, Book Department
P. O. Box 31, Caldwell, N. J.

The December Issue of Aerosol Age
Will Be Distributed at the
New York CSMA Convention

Make your advertising reservations now for this important issue, which will be distributed to the industry leaders attending the Chemical Specialties Manufacturers Association Convention at the Hotel Roosevelt in New York, Dec. 4-6.

Special editorial features will tie in with the convention—and your advertising will benefit from the extra circulation and interest which this big issue will enjoy.

Regular advertising rates will apply—Get your advertising reservation in before the Nov. 12 closing date.

AEROSOL AGE

P. O. Box 31 Caldwell, N. J.
Phone: CApital 6-5520

Mounting Cup Measurer

A new instrument to measure the bead on aerosol mounting cups has been developed by Testing Machines Inc., 72 Jericho Turnpike, Mineola, L. I., N. Y. The gauge has a range of 1 and 1/16" with readings of .001", and the dial has a low reading of 1.065", with a high reading of 1.075". If the reading is between the latter two points, the diameter is considered satisfactory.

The graduated scale and dial are manufactured of compressed P.V.C. and are crush proof and inert to the influences of oil and gasoline. The figures cannot be scratched off. Plungers are stainless steel, and dial is of unbreakable glass.

•

Offer New Electronic Index

The availability of a new electronic reference index of organic compounds has been announced by Fritzsche Brothers, Inc., major manufacturer of synthetic aromatic chemicals, and flavor and fragrance compositions. Called the "Fritzsche Codex of Structural Formulas," the new high speed system was demonstrated last month at the National Chemical Exposition in Chicago.

Key feature of the system is that it locates organic compounds, either commercially available or in a developmental stage, by their chemical structures rather than by often ambiguous nomenclatures. In a matter of minutes the Codex is able to supply such information on some 20,000 organic compounds grouped in 18 functional categories, and their combinations.

The Codex is reported to have taken more than two years of full-time effort by a task force of Fritzsche chemists. It is being offered on either a subscription or specific-inquiry basis.

•

Hand Sprayer Rivals Aerosol

A new trigger sprayer which develops up to 300 psi ejection pressure has been developed by the AFA Corp. of Miami, Florida. Made of Escon polypropylene, the unit may be washed in either hot water or petroleum cleaning solvents prior to re-use. Only slight hand pressure is required to produce a uniform fine

spray from the unit, and it is also offered with a device which prevents dribble during operation.

•

Gottscho Offers Folder

A simplified presentation of Adolph Gottscho's basic line of package coding, marking and imprinting machines has been incorporated in a file folder designed for use as a permanent holder for related data on the subject. The folder also includes a "Package Imprinting Selector Chart" that illustrates the type of imprinter to use for every kind of package and operational sequence. The file folder-catalog is available on request from Adolph Gottscho, Inc., Hillside 5, N. J.

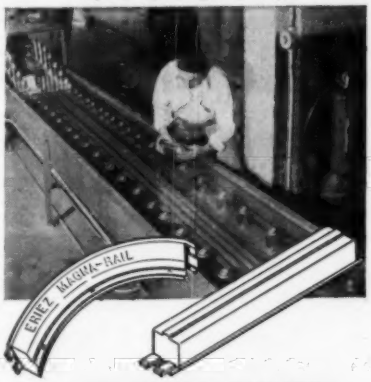
•

US Steel Develops New Tinplate

A new grade of lighter, thinner developed by United States Steel tinplate called "Ferrolite 10" has been Corp., Pittsburgh. Priced 15 cents per base box lower in all basis weights than present Ferrolite, it has a coating of 1/10th pound of tin per base box.

ERIEZ Magnetic Minute

60 seconds that will help you improve operating efficiency.



MAGNETIC POWER SPEEDS CANS THROUGH MOST ANY OPERATION

Through leak test tanks, under hot water, straight up or down steep inclines, around corners . . . run your cans anywhere. Eriez permanent magnetic Magna-Rails — installed behind conveying lines — will hold even light weight aerosol cans of various sizes securely, at high speeds.

One versatile Magnetic conveying line will handle most any size, shape, and weight of container. No need for time consuming mechanical changeovers for handling different size cans. And any can may easily be plucked from the belt for inspection.

Magna-Rails are available in straight and curved (transition) sections. You can install them easily for fast conversion of existing conveying systems into magnetic conveyors or elevators, or on new lines. Erium® magnetic power provides non-slip control at high speeds, even up near-vertical inclines. You can convey on top and bottom sides of lines; automatically turn cans over; change direction of flow.

Full technical data, engineering counsel and application ideas are available on request. Write to:

ERIEZ MANUFACTURING CO.
205X Magnet Dr., Erie, Pa.
ERIEZ OF CANADA LTD.
P.O. Box 5, Stn. W—Toronto, Ont.

MAGNA-THOUGHT

Creative imagination, combined with quality of raw materials and integrity of service are the foundations of Eriez success.

C. B. Giermak

CHESTER GIERMAK
Sales Manager

ERIEZ

A GROWTH COMPANY . . .
10 NEW PRODUCTS IN THE LAST 5 YEARS

Now—a good aerosol can coder for only $395*!

SIMPLE! SELF-POWERED! COMPACT!

Gottscho "Sideline" Markocoder* Conveyor-Line Attachment

• Foolproof . . . automatic — marks concave can bottoms at speeds to 150 per minute. Easy to install anywhere on the line. Requires no power. Uses quick-change rubber type. Sanitary design . . . for wet or dry areas.

Booth 519
PMMI SHOW

*For any single specified can size. Change parts for other sizes available at additional cost.

First and foremost in automatic production-line CODING, MARKING and IMPRINTING machines

Gottscho®

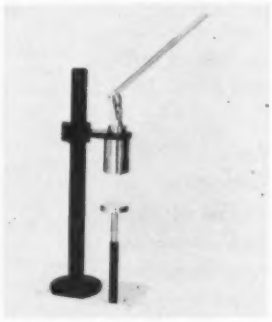
Write today for Bulletin "SLM"

GOTTSCHO, Dept. X • **HILLSIDE 5, N.J.**

Can crimper model 3000-C $159.50*

Crimps any size aerosol can with a 1 inch opening.

FOB West Palm Beach



Bottle and vial crimper Model 2000-B $279.50*

Crimps all bottle and vial aerosol containers from 13mm to 20mm. NO SPINNERS! NO COLLETTES!

AEROSOL FILLING and TESTING EQUIPMENT

write for complete brochure

PRESSURE PAK, inc.

Division of American International Development Corp.

417 Monceaux Road — West Palm Beach, Fla.

EMSON METERED VALVES

. . . More and more marketers of aerosol perfumes, colognes and pharmaceuticals are using metered valves. As a result of developments by Emson Research, it is now possible to meter out practically any product which can be poured out of a can or bottle.

. . . The Emson metered valve is the most widely used metered valve in the world. Because of its unique principle, it can be used to dispense a quantity of material from small doses of 50 ml up to large doses of 10 cc or more.

. . . A recent development, which could further expand the market, is a valve used for compressed gases for dispensing liquids either in liquid or spray form, without risk of accidental charge of the propellant and with assurance of complete evacuation of the package.

The following are licenses or agents of the Emson metered valve:

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Valve Corp. of America
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Bridgeport, Conn.

Emson Research, Inc.
118 Burr Court
Bridgeport, Conn.

USDA Accepts Vapona Labels

The U. S. Department of Agriculture has accepted new labels for the use of Vapona Insecticide (DDVP) in controlling annoying insects in and around livestock buildings, according to a recent announcement by Shell Chemical Co., New York, manufacturer of the product. The insecticide had previously been accepted for use in controlling the face fly on livestock, but now it can be used as a spray, bait or fog in and around dairy barns, milk sheds, stables, livestock barns, loading sheds, pig pens and outdoor areas.

An economical, low-dosage pesticide with a quick kill, Vapona is said to control flies, gnats, fleas, brown dog ticks, mosquitoes, ants, sowbugs and roaches—even resistant strains. The insecticide is available as a 0.5 per cent solution, a two-pound-per-gallon emulsible concentrate (which is mixed at 1 quart per 12½ gallons to make a 0.5 per cent working solution), or a 0.5 to 1.0 per cent fogging solution. One quart of the coarse wet spray solution covers 1,000 square feet, and one quart of the 0.5% fogging solution will treat 8,000 cubic feet.

The company cautions that animals should be out of the building during treatment and treated areas should be ventilated afterwards. And milk or milking utensils and livestock foodstuffs should not be contaminated.

•

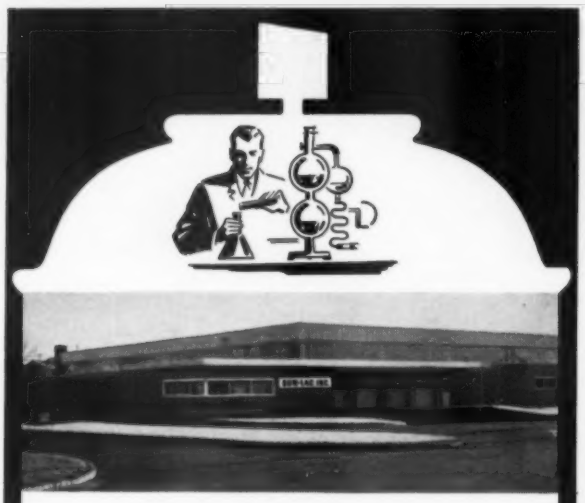
Leak Detector Bulletin

General Electric Co., Schenectady, N. Y., has just issued a new bulletin describing its Type H line of portable, electronic leak detectors which are said to be sensitive enough to locate pressure and vacuum leaks as small as 1/100 cu. in. per day. The line includes the Type H-2 Gun Detector, the Type H-5 Pencil Probe Detector (both for inspection of welds, seams, joints, and other suspected areas of leakage in pressure systems), the Type H-3 Stationary Detector for automatic production line leak testing, and the Type H-4 Vacuum Detector for vacuum leak checks.

V. C. A. has available a complete line of collar units for 20mm. and 1" opening aluminum containers adaptable to both metered and non-metered valves. They are available in a variety of decorations and different shape buttons. Further information is available from V. C. A. Inc. at 1720 Fairfield Ave., Bridgeport, Conn.

New Booklet for Shippers

An idea booklet designed to help management increase efficiency and cut costs of its packing and shipping operations has been published by Better Packages, Inc., Shelton, Conn. "20 Tested Methods to Improve Packing and Shipping Operations" is a 16-page illustrated booklet containing tips, ideas, and suggestions for shippers. It includes chapters on safety, savings, product protection, proper maintenance of equipment and lists, etc. It is available on request to Better Packages, Inc.



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- Develop specialized formulations to suit your product line

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Offer Germicide Booklet

A seven-page bulletin just published by Rohm & Haas Co., Philadelphia, discusses properties and uses of Hyamine 1622 and Hyamine 10-X, quaternary ammonium germicides. Hyamine 10-X is a crystalline product; Hyamine 1622 is supplied in both crystalline and 50% aqueous form. Hyamine 1622 Crystals appear in U. S. Pharmacopoeia XV as benzethonium chloride; Hyamine 10-X is listed as methyl benzethanium chloride. The booklet states that these compounds, in low concentrations, are effective against a wide variety of microorganisms, forming odorless, colorless, non-poisonous and non-irritating solutions in use dilutions.

Applications discussed include proprietary pharmaceuticals and cosmetics; hospital and home laundries; veterinary uses; general deodorization; and sanitation of restaurants, dairies and food plants. Since both Hyamine 1622 Crystals and Hyamine 10-X are crystalline germicides of high purity they are said to be particularly suitable for use in cosmetic and pharmaceutical products. Sections of the booklet provide data on phenol coefficients, use dilutions, effect of pH and various ions, and toxicity. Composition solubility, compatibility and other chemical and physical properties are also treated.

This technical bulletin on Hyamine 1622 and Hyamine 10-X may be obtained from the company's Sanitary Chemicals Dept., Washington Square, Philadelphia 5, Pa.

•

Dutch Firm Makes Cans

N. V. De Vereenigde Blikfabrieken (United Can Works), Damrak 28, Amsterdam, Netherlands, recently began production of a tinplate aerosol can without sideseams. The unit is being offered in a variety of standard sizes with lithographed or other side decoration. The cans may be ordered with a wide range of interior and exterior coatings.

•

British Riker Offers Film

A new 16-mm. film entitled "Aerosols in Medicine" has been made by Riker Laboratories Ltd., Loughborough, pharmaceutical, and nursing processions. It explains how aerosol products work, how they are made, and emphasizes the importance of quality control. It also demonstrates the uses and limitations of aerosols and shows how they may be used for inhalation therapy.

•

Offer Hexachlorophene Booklet

Sindar Corp., 321 44th Street, New York 36, N. Y. has just issued a technical bulletin titled "Methods of Analysis for the Quantitative Determination of G-11 (Hexachlorophene U. S. P.)". It includes a detail description of the following testing procedures: 1. titrametric determination, 2. colorimetric determination, and 3. ultraviolet determination.

Each of the methods of analysis is explained in detail, with charts to explain graphically what patterns will result.

Sizing Factor Calculator

A sizing-factor calculator which provides one-setting solution of the basic temperature-pressure and specific-gravity equations involved in rotameter sizing is available from Brooks Instrument Co., 407 W. Vine Street, Hatfield, Pa. at the price of one dollar. Though designed and distributed by Brooks, the calculator is applicable to any rotameter-type instrument made by any manufacturer.

It consists of two circular slide rules, one for solving liquid-service equations and one for gas- and steam-service equations. A single setting of the process variables on the slide-rule scales provides the user with a "sizing factor". This derived factor, when multiplied by the maximum desired flow of the gas or liquid to be metered, gives the value of an equivalent flow of air or water at standard temperature-pressure conditions. Back of the calculator lists specific gravities of common gases and rotameter-float materials.

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• Can Piercers
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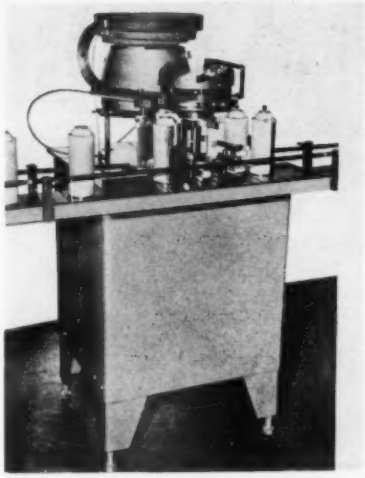
Offer New Button Applicator

The E. J. McKernan Co. of Elgin, Ill., has just announced a new automatic aerosol spray tip applicator for applying buttons to aerosol cans at a rate of 160 per minute.

The "Liberty Spray-Tip Applicator" is said to eliminate from 4 to 5 people on the production line, based on an average production rate of 120 pieces per minute. It can be operated at a speed of 160 tips per minute, properly seating each spray tip without spraying the product, and without the possibility of human error. With its precise application of the tips there are no loose or lost spray tips on dealers' shelves, reducing returned goods to a minimum.

The machine, with easy-to-use change parts, can handle all popular valve spray tips, including Seaquist, Newman-Green, Aerosol Research and Precision. Changeover time is just three minutes. Performance has been proved over extended periods. Easily adjustable for aerosol cans from the 202 x 314 to the new, large 300 diameter, 24-ounce can. Changeover of cans is accomplished in five minutes.



Spray tips are applied automatically only when cans are in position, no can, no button, and it self-adjusts for heights and self-leveling. Explosion-proof motors and wiring are optional. Manufacturer is Haumiller Engineering Co., Elgin, Ill. and agent is E. J. McKernan Co., 314 E. Chicago St., Elgin, Ill.

Expiring Patent Digest

A new monthly publication which gives summaries of the contents of all pharmaceutical patents expiring during the same month one year later is being published by Louis Leaman, 26 Columbia Street, Brookline 46, Mass. Called *The Digest of Expiring Patents*, it covers approximately 600 patents annually. These include pharmaceuticals, patent medicines, chemotherapeutic agents, cosmetics, natural biologicals, veterinary and nutritional products, germicides, essential oils, etc.

Powers Names Two VP's

John Robert Powers Cosmetics, New York, last month appointed Clifford W. Petit, Jr. to be vice-president and general manager, and Thomas J. McEwan as vice-president in charge of Marketing. Both are from Warner-Lambert Pharmaceutical Co., where Mr. Pettit was sales manager and Mr. McEwan was marketing director.

Snyder Heads Gen. Aniline

General Aniline and Film Corp., New York, producer of polyvinyl pyrollidone and other resins, has elected John I. Snyder Jr. to the posts of board chairman and chief executive officer. He succeeds Thomas A. Morgan, who resigned.

Mr. Snyder is also president of U.S. Industries, Inc., and is a director of American Research and Development Corp., the Cory Corp., Vickers-Armstrongs, Inc., Commerce Oil Refining Corp., and Metro-Goldwyn-Mayer, Inc.

•

Lestoil Appoints Fredericks

Edward J. Fredericks, former marketing director for Simoniz Co., has been appointed to the newly-created post of director of marketing for Lestoil Products, Inc., Holyoke, Mass. In addition to supervision of the company's brand managers, he is in charge of all domestic and international sales, advertising, sales promotion, and public relations.

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Canco Unveils 24-oz Can

The American Can Co., New York, has just announced development of a 24-ounce pressure container which will hold approximately 50% more product than its present 16-ounce unit. To be introduced commercially in December, it is the result of 36 months of intensive developmental effort by American Can. Canco marketing executives suggest that the new can may result in a trend toward "large economy size" aerosols, with a reduction in the selling price per ounce to the consumer. In the photograph above, the 24-ounce unit may be compared to the 16-ounce size from the standpoint of height and diameter.

•

JG Machine Expands Line

JG Machine Works, Inc., Little Ferry, N. J., last month announced that it will act as sales agent for The Gray Co., Minneapolis, and Builder's Sheet Metal Works, Inc., New York. The Gray Co. is a principal supplier of propellant pumps to the aerosol industry and Builder's supplies laboratory filling equipment and other miscellaneous aerosol experimental components. The new equipment will be an addition to JG's complete line of aerosol production equipment.

•

Esso Sells "Flit" Trademark

Domestic rights to "Flit," one of the best-known trade names in the insecticide industry, have been sold by the Esso-Standard Oil Co., New York (now a subsidiary of the Humble Oil Co.) to Black Leaf Products Co., Chicago, a leading insecticide marketer. On the market for nearly 40 years, "Flit" was first introduced as a liquid spray. It's slogan "Quick, Henry, the 'Flit'" was probably one of the best known commercial slogans in the 1930's and '40's. It was originally marketed by Stanco, Inc., a subsidiary of Standard Oil Co. of New Jersey.

Esso - Standard retains foreign rights to the trade name.

•

Gene Rose Co. Moves

Gene Rose Co., Inc., Chicago custom filler, has moved to new quarters at 2222 Lunt Ave., Elk Grove Village, Ill., a suburb of Chicago. Telephone numbers are NAtional 5-8715 and HEmpstead 7-1414. The new plant will include greatly expanded production, research, and warehousing facilities.

•

ConCan Shifts Lee Mason

Lee Mason, former sales manager for industrial and household product cans at Continental Can Co., New York, has been appointed general manager for the company's metal specialties and "Decoware" metal housewares line. He is succeeded in his previous post by P. H. Black, who had been district sales manager in Boston.

•

Rasmussen to Perry Post

Perry Brothers, Inc., New York aromatic chemical and perfuming material supplier, has appointed Jack Rasmussen as manager for its midwestern operations, with headquarters in Chicago. He was formerly with Albert Verley & Co., Linden, N. J.

•

Simoniz Elevates Tyson

The Simoniz Co., Chicago, has elected John M. Tyson, former director of advertising, to the newly-created position of vice-president in charge of sales. He will direct overall sales and sales promotion activities. Before joining the company last year,

WAIT before you buy...

Enhance your product with these Distinctive Designs!

UNCOATED AEROSOLS

A-600 ¼ oz. uncoated glass purse size aerosol bottle
A-700 1½ oz. uncoated glass aerosol bottle
A-750 2 oz. uncoated glass aerosol bottle
A-800 3 oz. uncoated glass aerosol bottle

The smart high fashion bottle that will please and delight your customers. Available for filling of perfumes, colognes, etc.

STAR BOTTLES

L-1100 ¼ oz. star glass bottle
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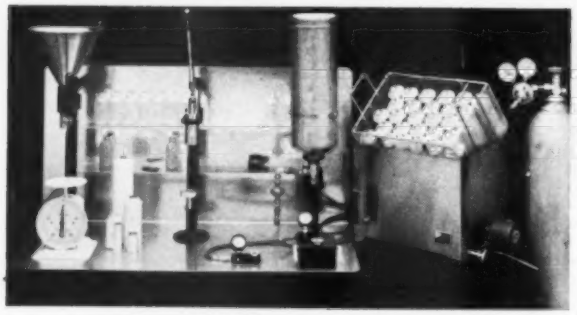

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Five Years Ago This Issue . . .

In most industries, a period of five years seems a relatively short time ago. In the aerosol industry, events have moved so swiftly that five years seems closer to ten. To duplicate this "reverse telescoping" effect, check over these items from Aerosol Age of October 1956:

1. DuPont began production of "Freons" 11 and 12 at its plant in Antioch, Calif., making it the first and still the only propellant manufacturer producing on the West Coast.

2. John Beacher left General Chemical to join the cosmetic laboratories of Avon Products, Inc., at Suffern, N. Y., and Leonard Baer was named Eastern sales manager for G. Barr & Co.

3. The Interstate Commerce Commission issued its Docket No. 3666, covering aerosols and similar products.

4. The annual forum of the Packaging Institute, held in Cleveland, featured aerosol papers by Tom Johnson of DuPont and Morrie Root of G. Barr. Both predicted big things for aerosol pharmaceuticals.

5. Wheaton announced a 75% increase in manufacturing facilities for plastic-coated glass containers as perfume marketers began showing serious interest in the aerosol package.

6. Continental Can won a key count round in its efforts to overcome government disapproval of its merger with Hazel-Atlas Glass Co.

●

Mr. Tyson spent 10 years in merchandising and advertising with McCann-Erickson, Inc., and Leo Burnett Co., New York. Max G. Kocour succeeds him as advertising director.

Aluminum Cans

(*From Page* 90)

metal strength, resistance to corrosion, and economics.

1. *Strength.* Here the aerosol packager must consider the usefulness of the lighter container in the light of its ability to withstand the internal pressure of the formulation as well as the normal external packaging stresses of unloading, labeling, warehouse handling, and shipping.

It is obvious that the strength of aluminum is less than that of steel of the same gauge, and that to achieve the strength needed by aerosol cans, it is necessary to fabricate thicker-walled aluminum cans. This adds to the unfavorable economics of this type of can and is likely a major reason for the various means of shaping, fluting or beading the can body which have been investigated with the hope of permitting reduction in gauge thickness. As has been pointed out by L. P. Gotsch of American Can Co., there is little commercial promise with this approach, since any improvement in can design which permits reduction in the thickness of aluminum sheet is equally applicable to tinplate.

Nevertheless, fully satisfactory aluminum aerosol containers are commercially available, and they are given the necessary strength by use of thicker gauge metal, by seamless construction, or by the use of aluminized steel for the critical container bottom.

Current Interstate Commerce Commission regulations limit the use of aluminum aerosol dispensers to a maximum pressure of 40 psi., a limitation which may be viewed as conservative in the light of long experience in Europe. Aksel Taranger of Aluminium, Ltd., points out that European aluminum containers are clearly suitable for use with pressures up to 90 psi., and that one two-piece Swiss aluminum unit is guaranteed for use up to 170 psi. In the U. S., American

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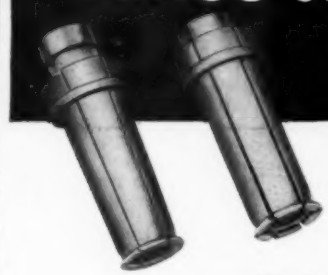

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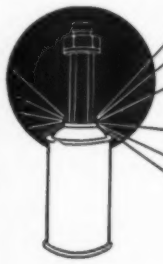

1. Standard crimping collet for any size can with 1" valve mounting cup.
2. Manufactured to standards set up by CSMA; may be used as replacements for crimping jaws of most other manufacturers.
3. Collets and plungers made of special alloy steel and are matched in hardness to increase wear resistance of working surfaces; work fatigue is minimized at pivot area by controlled heat treatment.
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We also manufacture a complete line of standard and special automatic, semi-automatic, and laboratory machinery for aerosol cans and bottles

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Now Available

PRESSURIZED PACKAGING (Aerosols)

Second Edition

By A. HERZKA, *Independent Consultant, London, and* J. PICKTHALL, *Director and Chief Chemist, International Flavors and Fragrances, (Gt. Britain) Ltd., Enfield, Middlesex*

1961, 509 pages, $15.00

The first edition, published in 1958, established PRESSURIZED PACKAGING (AEROSOLS) in a matter of months as the first comprehensive reference work to serve the comparatively young pressure pack industry. Now brought fully up-to-date, the inclusion of new material on compressed gases and formulations employing compressed gases, a new section on legal requirements containing regulations and a bibliography of relevant patents makes the present enlarged edition of even greater importance to the literature.

The book's 21 chapters deal with propellants, containers, valves, filling methods, laboratory procedures, emulsified systems, and perfumes. There is a complete section containing more than 200 formulations covering such widely different items as food, insecticides, cosmetics, paints and varnishes, medicinal preparations, and numerous other products. In addition, trade names and patents and a world directory of suppliers are appended.

Review: The text is concise and well written." — AEROSOL AGE, April, 1961.

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Caldwell, N. J.

Typical of the good reception of pharmaceutical marketers to the aluminum can is this line of aerosol drugs packaged in Peerless containers by Schering Corp., Bloomfield, N. J.

Can Co. designers have come up with an aluminum aerosol can with a bursting strength "in excess of 250 psi."

While it is obvious that red rust will not occur in aluminum, corrosion can take place—either by atmospheric action during processing or by corrosive attack by can contents not chemically compatible with aluminum. External oxidation causes an unattractive finish, but the perhaps more serious internal corrosion can result in premature can failure or noticeable contamination of the product. Such corrosive action may be minimized by any one or combination of four production methods:

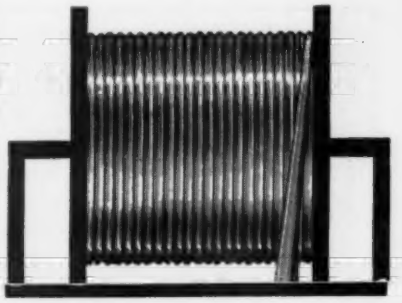
1. Careful selection of aluminum alloy composition.
2. Use of anodizing techniques.
3. Use of protective coatings.
4. Use of inhibitor in product formulation.

Resistance of aluminum to a number of acid foods (tomato juice, orange drink, etc.) is adversely affected by the presence of even small amounts of magnesium, which is added to the metal to increase its strength. Therefore in attempting to package such products, the desirable approach is to use an aluminum alloy of the lowest magnesium content without sacrificing the required strength. For two-piece cans, the shell of the unit may be fabricated of alloy 1100, which contains only a trace of magnesium. The bottom is then made of a heavier sheet of magnesium-containing aluminum alloy. The alternative approach is to use aluminized steel or tinplate bottom in conjunction with a low-magnesium aluminum shell.

But probably the most reliable means of protection has been by electrolytic treatment of the container in an anodizing bath, in which the naturally protective aluminum oxide coat is built up to a layer of 4 to 6 microns. This technique serves the dual purpose of raising corrosion resistance and at the same time removing all lubricant from the surface, thus rendering it immediately suitable for decorative or protective coating. Anodizing of aluminum aerosol containers is practiced extensively in Italy, Switzerland and the Netherlands.

It should be pointed out, however, that this method requires more individual attention than is normally justified in U. S. production speeds, and the U. S. and German can makers rely more on organic coatings applied on top of carefully pre-treated aluminum surfaces. Advantage is usually taken of the can's seamless construction to provide a continuous internal coating. John Jackson of the American Can Co. reports good performance with epoxy and phenolic enamels, and there has also been active interest in the use of vinyl resin as a "top coat."

Some corrosion inhibitors are available for use in products to be packaged in aluminum cans. For instance, DuPont has hinted that its "Freon 11S" (propellant 11 with 0.3% nitromethane as a corrosion inhibitor) may be useful for formulations in-



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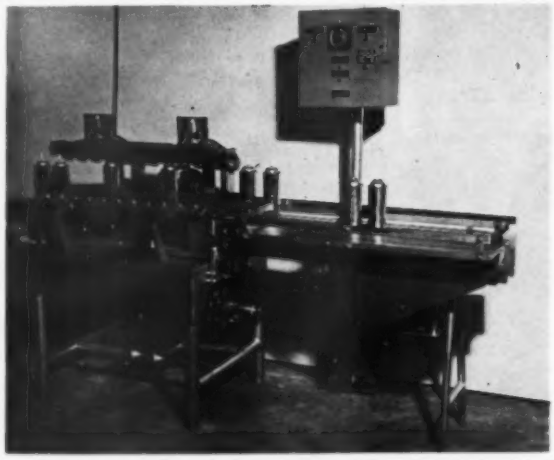

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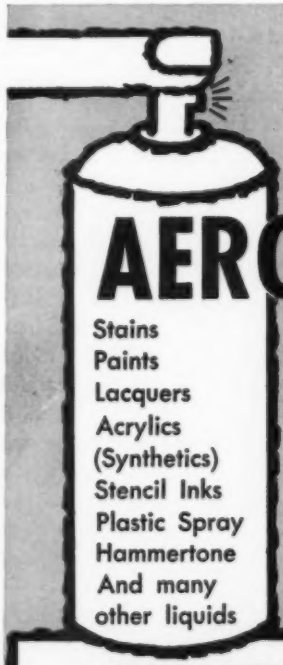

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tended for aluminum aerosol cans. This, however, remains to be studied over a long period of shelf testing.

By use of one or the other of these production techniques, aluminum containers can be adequately protected against corrosive attack by nearly all propellants and products today commercially available in aerosol form.

The key aspect affecting the future of the aluminum aerosol can is the relative cost of aluminum and of tinplate. As has been mentioned, in such countries as Italy where the price differential is not great (or, in fact, favors aluminum) the aluminum can has found widespread aerosol use.

In the United States and Canada, a different situation prevails. Even in the same metal thickness, aluminum is more expensive than tinplate, and as we have seen, strength considerations make it necessary to use the thicker-gauge aluminum sheet. Furthermore, aluminum cans must be anodized or coated to prevent loss in appearance, and this adds further to the adverse cost picture.

It remains to be seen how the relative cost situation will shape up if aluminum aerosol can reach very large volume markets, or if tinplate experiences further price increases. An example of what could happen was the 1958 introduction of an aluminum sheet for fabricating motor oil and frozen fruit juice cans. This aluminum sheet is sold on a special commodity basis at the same price as tinplate of the same gauge. The situation therefore results in no cost penalty to the can purchaser, but a loss in the can's strength, of course, is experienced. ★

New Research Center

(*From Page* 71)

gested that new sealing compounds might overcome this weakness.

Another long-range project which could have aerosol repercussions is a process called "continuous tube welding" from coiled tubes of tinplate—a radically new method of can making which would dispense with soldering and make better containers at reduced cost. It was pointed out here that it would be possible to fabricate 1000 feet of tubing per minute and that the cost savings would derive mainly from reduction in costs of solder, material now used in the hooked seam, and can tube handling. Seam strength would be substantially increased by the new process, a major factor of importance to the aerosol packager.

The visitor to the Metal R&D laboratory is usually impressed by the fully equipped physical, chemical, bacteriological, and packaging laboratories which make up so much of the floor space. Experimental can making lines, a packaging pilot area, controlled temperature storage rooms, test kitchen and taste testing laboratory are other facilities found here.

Another project of importance to aerosol packaging is Continental's work with the "presolder side seam striping", which insures that metal exposure be kept to a minimum. This can making refinement is attained by application of carefully selected roll-coated and spray-applied protective coatings. One type is known as side seam striping, since it covers the solder-filled crimped side seam. This enamel customarily has been spray applied after the solder operation. With the new stripe, heat from the soldering operation bakes the enamel.

A far cry from the hot water bath usually found in aerosol plants is Continental's Mass Spectrometer Leak Detector, which is described as the most sensitive and accurate instrument known for indicating extremely small leaks. By measuring the flow of tracer gas, usually helium, through the leaks, the instrument determines the effectiveness of structures and materials and will detect a leak rate equivalent to one cubic centimeter of gas per 600 years. This is obviously not an every-day device, and is used for special projects to establish and verify sealing and soldering compounds for beverage, aerosol, and similar cans.

Still another project in Metal R&D is the fabrication of one and two-

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piece aluminum aerosol cans. Pilot plant lines and the laboratory-size aerosol filling line are used together to establish specifications for production runs of these containers.

The Mass Spectrometer Leak Detector is just one of hundreds of complicated test instruments at Metal R&D. But the most complex of the scientific instruments in the entire Technical Center are housed down the street at Central R&E. The electron miscroscope, a Reta gauge density gauge, and icononumerator, x-ray diffractometer, and an automated corrosion tester, are just a few of many highly complicated, costly devices for advanced and basic container research.

Aerosol containers were also in evidence at the Glass Research and Development laboratory at Plainfield, Ill. Although not in production, the Hazel-Atlas Division is obviously devoting considerable research effort toward perfecting a coated glass aerosol bottle for colognes and similar products. Samples of drop tested bottles and some newer glass container shapes were seen in the laboratory, and some vinyl coatings for non-aerosol bottles were also in evidence.

Glass Research and Development's chief research effort, however, is attaining process control in the plant. Typical of this is an electronic inspection device which eliminates all containers with split or cracked sealing surfaces. It detects and rejects containers with defects so slight inspectors have difficulty spotting them visually.★

Fritzsche Award to Jones

The selection of Prof. E. R. H. Jones of Oxford, England, by the American Chemical Society's current 140th meeting in Chicago as the recipient of the 1962 Fritzsche Award was announced last month by John L. Cassullo, president of Fritzsche Brothers, Inc., New York. Prof. Jones, who has held the chemistry chair at Oxford University since 1955, is one of the world's foremost organic chemists whose record includes such distinguished assignments as: lecturer at the Imperial College of Science and Technology; professor of chemistry of the University of Manchester; Arthur D. Little visiting professor of chemistry at M.I.T.; Karl Folkers lecturer at Universities of Illinois and Wisconsin, and others. He is also a recipient of the Meldola Medal, Royal Institute of Chemistry, and a fellow of the Royal Society.

The Fritzsche Award was granted to Prof. Jones for his outstanding contributions in the field of terpenoid chemistry—notably the chemistry of the higher terpenes and the synthesis of terpenoids related to Vitamin A. His work has been authoritatively termed as "a classical break-through in terpene chemistry, which has proved to be of enormous structural as well as biogenetic significance." The award was established by Fritzsche Brothers, Inc., in 1946, in com-

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Aerosol Containers

(*From Page* 108)

order to be commercially satisfactory, a container must withstand the pressure of the product through filling, shipping and storage as well as meet the strength requirements specified in the I.C.C. Regulations. Time will not permit a thorough discussion of these regulations; it is sufficient to say that aerosols having pressures over 25 psig. at 70° F. (unless flammable) and packed in containers of over 4 fl. ounces capacity and 2-inch outside diameter, are most likely covered. The specific requirements will vary, depending on product, propellant and container involved, but there are two basic principles underlying the provisions. One establishes maximum attainable pressure partly on the basis of potential explosive energy, which in turn is governed largely by the type and amount of propellant. The other requires that containers shall be capable of withstanding, as an absolute minimum, the pressure of contents at 130° F. This, of course, means that the pressure of primary concern from a container standpoint is that at 130° F., whether the regulations state it in these terms or not. Graphs of the vapor pressure - temperature characteristics of the pure propellants illustrate these principles. At one extreme we have the non-soluble compressed gases such as nitrogen. It is present in the formulations in extremely small amounts and has a very shallow pressure-temperature curve. At the other extreme are the liquefied gas propellants as exemplified by the halogenated hydrocarbons sold under the trade names of Freons, Genetrons, Isotrons and Ucons, as well as the hydrocarbons such as butane and isobutane alone or in combination. These propellants, which have a very rapid pressure increase with temperature, may be present in small amounts in the range of 3-5% for water base foam (soap type) products or upwards of 85% in insecticides. Soluble compressed gases such as carbon dioxide or nitrous oxide fall in between, with about twice the rate of pressure increase with temperature as the non-soluble compressed gases, but still not approaching that of the liquefied gas propellants. These facts explain why a given container may be recommended for products containing 100 psig. at 70° F. with nitrogen propellant, 80 psig. at 70° F. with nitrous oxide propellant, and 40 psig. at 70° F. with liquefied gas propellant.

Most products packed in glass and

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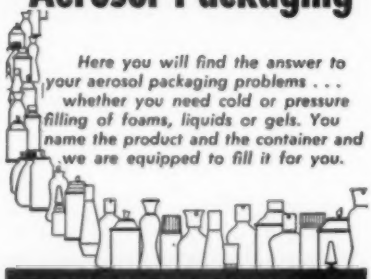

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All we've got to say
is on page 104

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plastic aerosols are exempt from the I.C.C. regulations because they are under the maximum 4-ounce capacity and 2-inch outside diameter limitations. As a matter of practice, the use of uncoated glass aerosols is usually restricted to products containing liquefied gas propellants under 15 pounds per square inch gauge at 70° F. Coated glass aerosols are used with products having liquefied gas propellant up to 25 psig. at 70° F. and there have been proposals to use these for products containing a non-liquefied compressed gas with pressures up to 100 psig. at 70° F. Recommended pressures for plastic aerosols are similar to those for coated glass. Three piece or fabricated aerosol cans are used with products having pressures up to about 45 psig. at 70° F. with liquefied gas propellants, up to about 80 psig. at 70° F. with soluble compressed gas propellants, and up to about 100 psig. at 70° F. with non-soluble gas propellants. The higher storage equilibrium pressures of products with compressed gas propellants may lead to a fatigue or "creep" of the soldered side seams upon extended storage, particularly at elevated temperatures. For example, standard three-piece aerosol cans with conventional solder will withstand pressures in excess of 150 psig. for short periods without failure, but equilibrium pressures in excess of 100 psig. may cause side seam failure in a matter of weeks or months depending on the temperature. To overcome this problem, special high strength solders are finding increased use for this class of products.

The drawn tin plate or extruded aluminum containers are also used for the same general classes of products, but in addition may be used for medium pressure products having from 60-70 psig. pressure at 70° F. of liquefied gas propellant (equivalent to 180 psig. at 130° F.).

The high pressure aerosol containers discussed earlier are designed for the high pressure products having up to 240 psig. of liquefied propellant and have been used with pressures up to 400 psig. with non-liquefied compressed gases.

Another important factor in choosing the container is its compatibility with the product. In metal containers, selection of tin coating or aluminum alloy, organic coating, if any, sealing compound and solders must be made with care. Although chemical and electrochemical tests are helpful in determining optimum specifications, they cannot replace storage test packs. The only 100% sure way to determine the shelf life of a product is to store the packed cans at normal temperatures for the required period of time. Unfortunately, this is not usually practical, so the so-called accelerated temperatures are used; 100° F. storage will generally accelerate corrosion by a factor of 2 to 3, but before reliance is placed in this correlation with room temperature, storage test results are mandatory. 130° F. has also been used as a so-called accelerated storage temperature. However, poor correlation between 130° F. storage and room temperature storage has frequently been obtained, and hence it is not considered very reliable except per-

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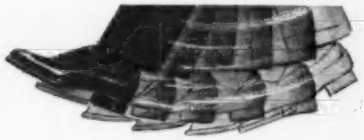

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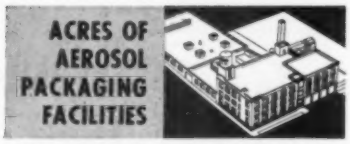

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haps as a rapid screening test of product or container variables.

Although not subject to corrosion, plastic aerosol containers impose a compatibility problem: that of permeation. "Delrin" and nylon are somewhat permeable to water and ethyl alcohol, and this may or may not be a problem depending on the specific product formulation. Plastics used in aerosols also tend to be permeable to strong solvents such as acetone and ethyl acetate. Some essential oil flavoring and odorizing materials may also cause permeation problems. Aerosol propellants are generally satisfactory from this standpoint. As with metal containers, plastic containers must be tested thoroughly with the product to be packed before being marketed.

NOW, what of the future? At the present time these things seem probable: first, aerosol containers will be manufactured having better appearance from both the design and decoration standpoints. Secondly, containers will be strengthened to meet the more rigid requirements being imposed by new products.

Third, more use will be made of new combinations of materials in containers such as metal and plastic. Fourth, larger capacity low pressure type aerosol containers than 16 ounce will become available. Fifth, there will be more dimensional standardization of containers from various suppliers. With a growing stream of new and better aerosol containers, the container industry will assist the aerosol industry in meeting its goal of 2 billion containers produced annually by 1970. ★

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Hair Sprays

(*From Page* 88)

pound (AMPD equivalent weight is 105.14) equal the weight of aminohydroxy compound for 100% neutralization. Variations in the weight of the amine used are expressed as percentages of the weight necessary for 100% neutralization.

Compounding and Formulation

Beads of Resyn 28-1310 are easily dissolved in SDA-40 alcohol (anhydrous) under agitation. It is recommended that the AMPD compound be added to the alcohol prior to the addition of the beads in order to aid rapid solubility. Also, it is suggested that the beads be added slowly to avoid clumping. The initial solids are set at 40% (this will add to the shearing process) and, after complete solubilization, additional alcohol and other ingredients are added to the formula. The recommended procedure is given in Table III.

Suggested formulations and fill for aerosol spray formulations based on Resyn 28-1310 are reported in Table IV. These formulations have been packaged successfully by conventional cold filling methods and have incorporated such widely used propellants as trichloromonofluoromethane and dichlorodifluoromethane. While solutions are cloudy at -20°F.,

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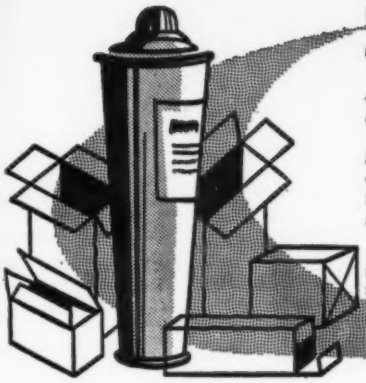

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they do not precipitate, thus permitting filling at this ideal cold filling temperature. Such resin-based formulations are readily perfumed and can be used in conventional tin-lined cans without encountering corrosion problems.

TABLE III
COMPOUNDING PROCEDURE FOR RESYN 28-1310-BASED FORMULATIONS

(1) Dissolve 4.4 parts of AMPD in 60 parts of SDA-40 alcohol (anhydrous).

(2) Slowly add 40 parts of the RESYN[R] 28-310 pearls to the mixture under agitation. Heat will help solubilization.

(3) When the mixture becomes viscous, add additional SDA-40 to complete solubilization.

(4) Cool and filter.

(5) Add perfume, lanolin and other ingredients.

WARNING:

Proper agitation is a necessity to provide sufficient shear and to prevent the RESYN[R] 28-310 pearls from CLUMPING.

Patent Status

Resyn 28-1310 is unrelated in chemical composition to previously patented hair spray resins. A patent, U.S. 2,996,471, covering the material, its neutralization with AMPD, and its hair spray application has been issued to the basic resin supplier, National Starch and Chemical, for the protection of present and potential users. A similar patent, 856,403, on the resin has been obtained in Great Britain.

Toxicological Status

Comprehensive toxicological studies have shown Resyn 28-1310 to be safe when used in hair spray preparations. A summary of these studies is available.

In anticipation of increased demand for the resin, National has announced plans for expanding facilities at its Meredosia, Ill. plant to produce the material in large volume quantities. The new facilities are scheduled to be in operation in December, with the copolymer becoming freely available by January, 1962. Limited amounts of Resyn 28-1310 have been available commercially since 1959. ★

CSMA Golf Meet

(*From Page* 92)

11. F. J. Brusky, A. Schrader's Son —71.
12. Hal Hecken, A. Schrader's Son —71.
13. C. Furst, Furst & McNess—72.

The low gross category list, in addition to Messrs. Drell and Cannella, read like this:

3. W. Allen, Givaudan-Delawanna —83.
4. Irving Goldberg, Aerosol Research—84.
5. E. H. Johnson, Fritzche Bros. —84.
6. Bob Peterson, Peterson Filling & Packaging—85.
7. Bill Dietrich, Continental Can Co.—85.

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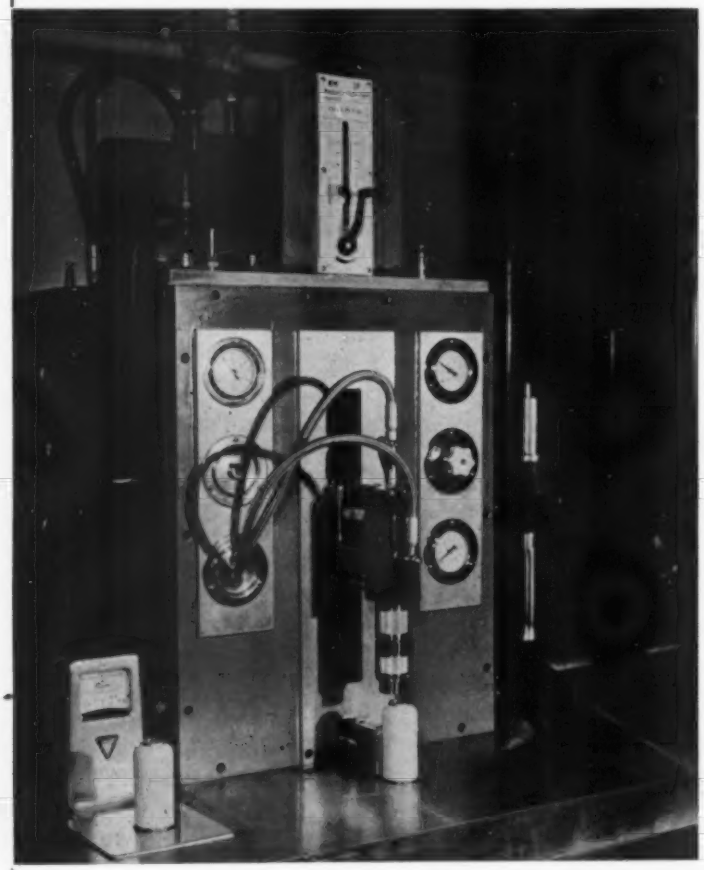

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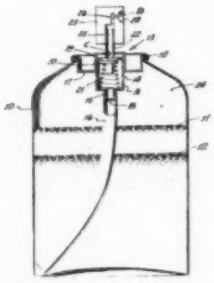
Zurich 1, Switzerland

New Aerosol Patents

Listed below is a brief review of recent patents pertinent to the aerosol and related industries.

Complete copies of these patents may be obtained by writing to the Commissioner of Patents, U. S. Patent Office, Washington 25, D. C., and remitting 25 cents for each copy desired.

2,995,278. PACKAGED SELF-PROPELLING LIQUID COMPOSITIONS. Issued Aug. 8 to Clarence Clapp, Montebello, Calif., assignor to Western Filling Corp., Los Angeles.

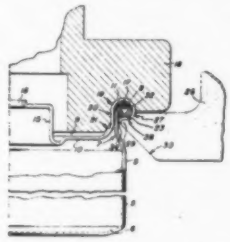


A package, comprising a pressure container, a pressurized gas phase in the upper interior of the container, a liquid composition in the container below said gas phase, said liquid composition consisting essentially of between about 35 and 80 percent of a liquid aqueous phase and the balance a liquid non-aqueous phase, said phases in static condition being essentially separate from each other and the specific gravity of the liquid non-aqueous phase being less than that of the liquid aqueous phase so that the static liquid non-aqueous phase remains on top of the liquid aqueous phase but is miscible therewith by agitation if desired, said liquid aqueous phase comprising an organic solute dissolved in a solution of about 30 to 90 percent water and about 70 to 10 percent alcohol of the group consisting of ethyl alcohol and isopropyl alcohol, said liquid non-aqueous phase being normally gaseous and containing flammable hydrocarbon, said gas phase comprising vapor from said liquid non-aqueous phase, and a dispensing assembly carried by the container and including a mixing chamber having first and second inlet passages respectively communicating with said gas and liquid phases and through which metered quantities of said phases are flowable for admixing in said chamber, said assembly including valve means for controlling release of mixed liquid and vapor from said chamber to form a non-flammable spray.

•

2,995,270. PRESSURE SPRAY DISPENSING CONTAINER AND METHOD OF CLOSING SAME. Issued Aug. 8 to John Henchert, River Forest, Ill., assignor to Continental Can Co., Inc., New York.

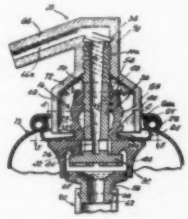
In a container of the type intended to be internally pressurized, a body having an open upper end defined by an integral outwardly turned closed bead, a closure for said end having a downwardly open channel embracing said bead, and sealing means interposed between the upper portion of said bead and the opposing portion of said closure channel, said closure including a continuous skirt portion turned under said bead and cooperating therewith in forming a closure sealing seam,



said bead and said turned skirt portion having cooperatively engaging flattened portions disposed generally perpendicular to the axis of said body, said bead terminating in an upturned edge firmly embracing the exterior surface of said body and said skirt terminating in a downturned edge firmly embracing the exterior surface of said body, said bead being resilient and being held in compression by said turned skirt portion with the tendency of said bead to resume its original shape reacting on said closure to continuously tightly and resiliently clamp said sealing means between said bead and said closure.

•

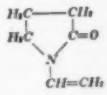
2,994,461. DISPENSING APPARATUS. Issued Aug. 1 to David Daniel Michel, 39 S. La Salle St., Chicago.



A portable dispenser comprising a container for materials to be dispensed having a base and an oppositely disposed open end, an apertured mounting cup peripheral portions of which sealingly engage said container adjacent the open end thereof, a dip tube extending within said container and having one end disposed adjacent the base thereof, an elongate apertured resilient member disposed within said mounting cup and having aperture defining portions adjacent one end operatively connected to the other end of said dip tube, said resilient member having a valve seat portion disposed within said aperture and spaced from said dip tube other end, an elongate ajutage carrying an integral valve seat mating plug member adjacent one end, being externally threaded adjacent the other end and being sealingly disposed within said resilient member aperture such that said plug member is intermediate said valve seat portion and said dip tube other end, means biasing said ajutage in a direction to effect sealing engagement between said plug member and said valve seat portion, the portions of said resilient member defining the aperture therein being spaced from the peripheries of said ajutage plug member and transversely apertured portion to permit free movement of said plug member and allow flow through said ajutage when said plug member and valve seat are separated, said plug member having the surface adjacent said dip tube other end transversely grooved to permit passage of materials from said dip tube when said ajutage and plug member are fully depressed, an internally threaded cover member which is adapted to receive and be threaded upon said ajutage other end, said cover member having a nozzle portion which extends radially outward from the axis of said threaded portion, and an abutting portion which is adapted to abut said mounting cup when said cover member is either threadably advanced on said ajutage, or moved with said ajutage to effect separation of said plug member and said valve seat portion, whereby the cover member serves to reinforce said ajutage biasing means and to regulate the maximum flow from said container.

•

Reissue 25,022, dated Aug. 8, of No. 2,871,161 which was issued Jan. 27, 1959. SPRAYABLE WATER FREE ALCOHOLIC POLYVINYL-PYRROLIDONE HAIR PREPARATION. Issued to Maurice L. Spiegel, Minneapolis, assignor to La Maur, Inc., Minneapolis.

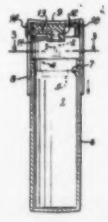


A substantially water-free sprayable liquid hair styling preparation for applying to the surface of the hair for setting [the] *and* lusterizing the same, comprising polyvinylpyrrolidone, alcohol, and a propellant selected from the group consisting of fluorochloromethanes and fluorochlorpethanes.

11. A process of holding and lusterizing human hair for cosmetic effect, comprising applying to the hair a substantially water-free alcoholic solution of a product essentially consisting of polymerized units of the structure.

•

2,998,165. PRESSURE CONTAINER FOR PERFUME SPRAY. Issued Aug. 29 to John De Elorza, Mount Prospect and Verona Aves., Newark, N. J.



A pressure container structure comprising a substantially cylindrical container, a restricted portion near the upper end of said container forming a shoulder, a casing surrounding said container and fitting

closely, an indentation near the upper end of said casing and extending sufficiently over said shoulder to retain said container in said casing to prevent accidental displacement thereof, a hollow stem at the top of said container, a cap on said casing, an insert in said cap having a recess adapted to accommodate said stem, and a passage from said recess to the outside of said cap.

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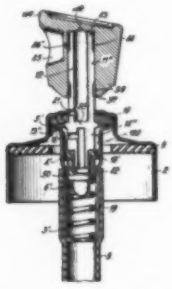
2,998,168. FLUID DISPENSER. Issued Aug. 29 to Wilhelm Waldherr, Mannheim, Germany.



A fluid dispensing device adapted to be mounted on the open top of a container and to constitute its closure, comprising in combination: a tubular valve housing adapted to fit into the open container top, said valve housing comprising a larger diameter upper portion having an outer end and a small diameter lower portion, a tubular valve shaft longitudinally glidable in said valve housing, said valve shaft having a shaft portion extending outside said valve housing and another portion extending inside said valve housing, a short tubular extension on said other valve shaft portion, coaxial bores being provided in said outwardly and inwardly extending valve shaft portions, a transverse separating wall between said bores, an annular cap for mounting the assembled valve shaft and housing in a fluid-tight manner on the open container top, a resilient annular sealing means mounted between the cap and the outer end of the valve housing, a compression spring supported in the lower valve housing portion, a cup-shaped valve head having an annular element surrounding and glidably engaging said other valve shaft portion extension, said extension and annular valve head element defining an annular interspace and the axial bore in the other valve shaft portion being in communication with said annular interspace, an annular sealing member mounted about said extension between the annular valve head element and the other valve shaft portion, the outer diameter of said sealing member being smaller than the diameter of the upper valve housing portion and at least as large as the diameter of the lower valve housing portion, said compression spring being so biased as to press the valve head against said sealing member to seal off said annular interspace and to press the valve shaft outwardly into a rest position, the valve shaft and the upper valve housing portion defining an annular fluid metering chamber, an annular flange on the valve shaft within said metering chamber and in sealing contact with said resilient annular sealing means in the rest position, said metering chamber and the interior of the lower valve housing portion, being in communication in the rest position through an annular passage between the lower valve housing portion and the valve head, said last-named annular passage being sealed by said annular sealing member when the valve shaft is depressed against the compression spring bias so that the sealing member engages the lower valve housing portion, a first lateral port means positioned in the outwardly extending valve shaft portion above said separating wall and in communication with the axial bore in said latter valve shaft portion, said first lateral port means being positioned outwardly of said annular resilient sealing means in said rest position and positionable inwardly of said sealing means in communication with the fluid metering chamber when the valve shaft is depressed into a dispensing position, and a second lateral port means positioned in said other valve shaft portion below said separating wall and interconnecting the metering chamber and the axial bore in the other valve shaft portion to provide a fluid inlet passage between the axial bores through said first and second port means when the shaft is depressed to interconnect the first port means with the metering chamber, the valve head being movable away from the annular sealing member under fluid pressure to establish communication between the axial bore in the other valve shaft portion and the interior of the valve housing through the annular slot between the valve and the lower valve housing portion.

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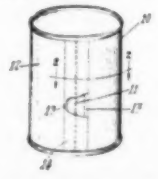
2,994,454. DECORATED CAN BODY. Issued Aug. 1 to Joseph S. Crowe, Wood Ridge, N. J., assignor to American Can Co., New York.



In combination, a high strength sheet metal can body having a metallically bonded side seam and a decorative coating of predetermined thickness which extends over substantially the entire outer surface of the body with the exception of a narrow zone within which the side seam is included, and a preformed, heat sensitive, self-supporting, decorative strip composed of colored synthetic resin having a thickness substantially the same as the thickness of said coating and a width equal to the width of said uncoated zone, said strip covering the length of said zone and being securely heat sealed in place throughout its entire area whereby the lateral edges of said coating and strip abut and merge to present a continuously decorated outer surface.

•

FDA Extends Label Deadline

The Food and Drug Administration on July 19 announced suspension of the penalty provisions of the Federal Hazardous Substances Labeling Act until Feb. 1, 1962, for all hazardous substances other than highly toxic, extremely flammable, and flammable. This is a further extension of the previously announced date of August 1, 1961.

The Act became enforceable Feb. 1, 1961, but authorized the Department of Health, Education, and Welfare to extend the effective date for not more than 1 month. The extension came on the heels of a generally unfavorable reaction to the proposed regulations issued by the FDA on April 29. Associations, firms, and individuals voiced strenuous objections to the proposed regulations during the 60 days from April 29 specified for submitting comments, and there were also two public meetings (July 13 and 14) during which further objections were registered. Deputy Commissioner of Food and Drugs, John L. Harvey said, the additional time "will be required to consider all the comments received and to issue final regulations."

•

Fritzsche Ups Chicago Staff

The addition of two new sales representatives in the Chicago area has been announced by Fritzsche Brothers, Inc., New York, supplier of essential oils, aromatic chemicals, and flavor and fragrance compositions. Russel E. Bull and Everett H. Johnson, Jr., join Fritzsche sales veteran Carl Edwards in a stepped-up program to meet the growing demands of the important Chicago market.

Mr. Johnson comes to Fritzsche from Polak's Frutal Works. Mr. Bull, formerly of Procter & Gamble, has been with Fritzsche for some 14 years in the St. Louis area.

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3. Two (1) Spalding Rotary Feed Crimpers, with Alpha crimping heads, equipped with air savers, and no can no crimp controls.
4. Paasche cap spraying booth, Type BP-4623, equipped with two (2) spray guns, 108 work holding spindles, infrared drying oven and water curtain circulating system.
5. International top and bottom dual carton Stapler.
6. One each, 10 H.P. 7½, 5 H.P. Refrigerator units, complete with heat exchangers.
7. Quincy Air Compressor, 5 H.P., 220 V., 3, 2, stage with 80 gal. receiver.
8. DeVilbiss Air Compressor, 10 H.P., 220 V., 3, 2 stage with 120 gal. receiver.
9. Miscellaneous Viking Gear Pumps.

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Carpenter Heads Colgate-Canada

Colgate-Palmolive Ltd., Canada, has appointed James H. Carpenter as president and general manager. He succeeds James M. Stevenson, who was named vice-president in charge of sales and advertising for the Far East in Colgate-Palmolive International.

SCC Reviews Biochemicals

"BIOLOGICAL Activity in Cosmetics" was the theme of a two-day meeting of the Society of Cosmetic Chemists, held Sept. 26-27 at New York's Barbizon Plaza Hotel.

V. deGennaro and R. E. Mackie, Chas. Pfizer & Co., reported to the audience that with the increasing cooperation between cosmetic and pharmaceutical industries, there is a trend towards the inclusion of biologically active ingredients in cosmetic preparations. These researchers pointed out that the versatile nature of a specific group of antibiotics suggests that these agents may find additional applications in this growing area of products. The topical non sytemic antibiotics (neomycin, polymycin bacitracin, and tyrothricin) have a number of characteristics which may make them attractive for cosmetic use. Mr. deGennaro, who presented the paper, cautioned strongly against indiscriminate use of antibiotics in cosmetics.

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AEROSOL ENGINEER: Extensive experience in all phases of aerosol packaging including equipment design and construction. Can set up complete aerosol line expecially for paints. Prefer midwest location. Address Box 268, c/o Aerosol Age.

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Another speaker, Dr. Emil Klarmann, Lehn & Fink, discussed what he felt were "open problems" in the areas of deodorants, vitamin cosmetics, hormone, and other steroid preparations, and sun tan cosmetics. His report, he indicated, was based on the premise that the pragmatic criterion of a "biologically active cosmetic" should be "the evidence of a topical, non-traumatic, pharmacodynamic-action, either accompanied or followed by a cosmetically desirable effect, but free from any undesirable systemic involvement."

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Trade Mark Registrations

Applications for registration of the following trademarks were published in recent issues of the *Official Gazette* of the U.S. Patent Office. In not all cases are there strictly aerosol trademarks, however, many of the products listed below come within the category of those for which a possible future use in aerosols is foreseen.

COAT OF ARMS, for shaving cream, cologne, personal deodorant, and other toilet articles. Filed Feb. 10 by Morton Manufacturing Corp., d.b.a. Blair, Lynchburg, Va., giving first use as July 11, 1956.

TRIVET, for pressurized shaving lather. Filed Nov. 16 by The Mennen Co., Morristown, N. J., listing first use as Aug. 12, 1960.

TETE A TETE, for perfume. Filed Feb. 29 by Parfums Ciro, Inc., New York, reporting first use July 13, 1959.

MONTREL, for veterinary drug for the control of parasites such as intestinal parasites, mites, insects such as lice and flies, and larvae of insects such as screw worms, cattle grubs, blowfly maggots, fleece worms, and the like, in and on animals, especially livestock. Filed Aug. 31, 1959 by The Dow Chemical Co., Midland, Mich., with first use given as July 20 of same year.

FORT DODGE SULFASOL, for veterinary preparation for the control of wound infection. Filed Dec. 12 by American Home Products Corp., d.b.a. Fort Dodge Laboratories, New York, giving first use May 22, 1942.

SLICK, for silicone mold release in aerosol can. Filed Oct. 26, 1959 by A. Margolis & Sons Corp., Brooklyn, N. Y., listing first use on or about March 20 of same year.

CURVEL, for personal deodorant. Filed Feb. 15 by The Mennen Co., Morristown, N. J., reporting first use Dec. 19.

MONA LISA, for perfume and toilet water. Filed Feb. 1 by Ritornelle, Inc., New York, with first use listed as May, 1949.

KIWI FOOT AND SHOE FRESH-UP, for preparation for soothing and deodorizing the feet and shoes. Filed Jan. 17 by The Kiwi Polish Co. Proprietary Ltd., Richmond, Victoria, Australia, giving first use Feb. 3.

AIR DE FRANCE, for cologne. Filed Nov. 14 by Helene Curtis Industries, Inc., d.b.a. Lentheric, Chicago, listing first use as Nov. 2.

TISSURAL, for perfume spray, hair spray, and other cosmetics. Filed Jan. 18 by Associated Laboratories, Inc., d.b.a. Vitamin Quota, New York, reporting first use July 6, 1960.

TELODRIN, for insecticides. Filed Oct. 24 by Shell Oil Co., New York, giving first use Oct. 5.

ALBERTO VO5, for hair spray. Filed Jan. 30 by Alberto-Culver Co., Melrose Park, Ill., giving first use as Nov. 30.

V-SPRAY, for aerosol packaged lubricant. Filed March 13 by Vitramon, Inc., Monroe, Conn., reporting first use as March 2.

WEST, for liquid spray deodorant for household use. Filed Dec. 16 by West Chemical Prdoucts, Inc., Long Island City, N. Y., with first use given as Nov. 17.

ACNEGENE, for medicinal skin preparation for the treatment of acne and pimples. Filed April 7 by Commerce Drug Co., Brooklyn, N. Y., listing first use as March 24.

TYLAN, FOR PRODUCT for the prevention and treatment of chronic respiratory disease in chickens. Filed Jan. 9 by Eli Lilly and Co., Indianapolis, reporting first use Jan. 3.

DARK SECRET, for toilet water, perfume, cologne, and other cosmetics. Filed Jan. 23 by Chesebrough-Pond's Inc., New York, listing first use as July 29, 1940.

AIRKOTE, for protective and decorative coatings, including paints, lacquers, enamels, etc. Filed April 4 by Airkote, Inc., New York, with first use given as March 1.

PLANTALBA, for antibiotic spray for the control of bacterial wilt on tomatoes. Filed Dec. 15 by The Upjohn Co., giving first use as Oct. 13.

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Spray Patterns

LOOK for an announcement by Precision Valve Corp. about its overseas valve production sometime this month. Contracts expire at the end of the year, and we hear some licensees will be dropped, a few retained, and a new Precision plant will go into operation in Germany.

* * *

As will be seen by the editorial on page 65, product quality control—particularly as it applies to net weights—could well become the prime consideration of the industry by the end of the year. The CSMA's Aerosol Division can be expected to devote some time and effort to this problem.

* * *

It is no secret that Dick Gelb, president of Clairol, is one of the better golfers in the industry, and to prove it is a past winner of the Stanley Kreps Memorial Trophy (for the Aerosol Invitational Golf Tournament) and a number of other trophies. On August 28th Dick proved his abilities again when he teamed up with his club pro, Earl Roy of Century Country Club, to win the Westchester Country Golf Association's Pro-Amateur Tournament at Tamarack, Greenwich, Conn. The combined score of the golfers, 64, was two strokes ahead of the nearest two-some.

* * *

Which way is the trend in shaving products going—to or away from electric shavers? Gillette, a major producer of aerosol shave creams and marketer of some 70% of all razor blades, claims that the "trend is clearly away from electric shavers." This is backed up by figures to show that electric shaver sales have dropped some $24 million in four years, and the claim that electric shaver makers have failed dismally to win over the younger generation. Remington, leading electric shaver marketer, discounts this with figures to show that in five years the number of men owning electric razors has risen from 18.3 million to 23.7 million!

* * *

U. S. aerosol paint marketers who boast of their range of colors should take a look at the new line of car paints just introduced for the British market by Holt Products Ltd., New Adington, England. The line includes some 70 color-matched paints for 1960/61 Ford, Austin, Morris Hillman/Humber, Triumph, Standard, and Vauxhall makes.

* * *

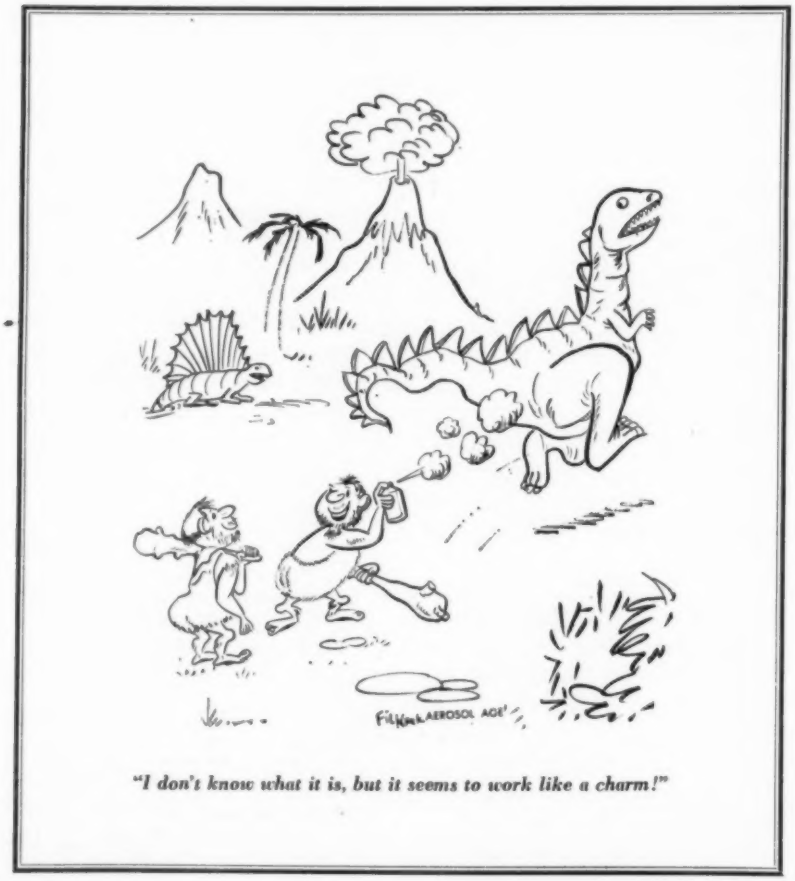
Last month this column reported that apparently the people of Soviet Russia aren't seeing any consumer packages in pressurized form. A report in the November issue of the British trade publication *Tin*, just called to our attention, reports that an aerosol spray is currently being "mass produced" in Riga for the treatment of the upper respiratory organs.

* * *

George Barr, president of G. Barr & Co., is apparently a philosopher as well as a successful filling company executive. On Sept. 10 on a television program called "Open End", which emanates from New York every Sunday evening at 9, Comedian Joe E. Lewis quoted George as having originated this gem: "It doesn't matter, brother, if you let money slip through your fingers, or even love slip through your fingers. But if you let your fingers slip through your fingers, you *are* in trouble!"

* * *

Washington observers credit the FDA's initial insistence that turpentine bear the signal word "Poison" (under the new regulations for the Hazardous Substances Labeling Law) as prime reason for a $580,000 slash in its appropriations by the Senate. These observers suggest that Georgia turpentine producers enlisted the aid of Sen. Richard B. Russell (D., Ga.), powerful member of the Senate Appropriations Committee, in their fight on the FDA. Sen. Russell is credited with having been instrumental in having some $1,580,000 slashed from the appropriation, $1 million of which was later restored.



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Fairfield Facts

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Specialty Insecticide Bases Serve Special Needs In Home & Industry

For the formulator who wants a better, faster-selling product and for the PCO who seeks greater on-the-job residual insect control, Fairfield's Powco brand line of insecticide bases holds the key to each of these important needs.

There is a Powco specialty base to fit virtually every different application and safety requirement. There is a hard-working Powco chemical to meet each job need —from extreme safety to extreme handling ease. Get acquainted with these residual chemicals. Added to a product, they spell dependable, fast-acting insect control.

Among the safest of Fairfield's Pyrenone base products are residual Pyrenone dusts, shown here being used to dust harvested tomatoes prior to delivery to the cannery. These dusts prevent fruit flies from laying eggs in picked, cracked tomatoes, preventing contamination of the pack.

DRIANONE...

Newest of the Powco bases, this white, odorless and non-staining silica aerogel is effective against all crawling and resting insects. Drianone's non-deteriorating and highly effective Dri-Die* base has been specially "conditioned" for greater handling ease. To this has been added Fairfield's Pyrenone**, a combination of piperonyl butoxide and pyrethrins. They give Drianone its fast knockdown and flushing action—highly desirable characteristics for a residual insecticide.

Conditioned Dri-Die used in the preparation of Drianone is an effective insecticidal silica aerogel which has been chemically modified to improve its handling characteristics and its ease of application. Conditioned Dri-Die is considerably easier to handle than other silica dusts. Conditioning makes this residual dust "stay put" once applied, prevents it from floating. It stays on the job and remains effective far longer.

DRI-DIE...

Exclusively distributed through Fairfield's nationwide sales network, Dri-Die is available alone, or in conditioned form, and/or in combination with Pyrenone. Serving as the base for a variety of home and industrial products, Dri-Die is an active ingredient of dusts to control roaches, ants, silverfish, waterbugs, etc., and in pet powders to combat ticks, fleas and lice.

SEVIN'...

Another new and important member of the Powco line, Sevin was primarily developed as an agricultural insecticide. However, used in combination with Pyrenone, its utility is extended for use in garden dusts and pet powders as well as for pressurized pet and horticultural sprays. The use of Sevin at the recommended levels in garden sprays will permit the label claim "Properly treated foliage will be protected from many garden insects for about one week."

PYRENONE DUSTS & INDUSTRIAL SPRAYS...

Safest of the Fairfield bases, Pyrenone sprays and dusts are ideal for use in food processing and meat packing plants, in canneries, wineries and bakeries—in all food serving or food processing establishments where ordinary insecticides present a hazard to safety.

Granted an extension by the Federal Government for use in and around food plants, Pyrenone provides fast and effective control. In emulsifiable sprays, liquid oil sprays, or as dusts, Pyrenone can be applied with ease to control virtually all common insects.

Pyrenone dusts are especially effective in protecting harvested tomatoes from fruit fly infestation. Widely used and legally recognized for post-harvest applications, Pyrenone dusts combine safety with effective control.

*Reg. U.S. Pat. Off.—W. R. Grace & Co. **Reg. U.S. Pat. Off.—FMC. †Reg. U.S. Pat. Off.—U.C.C.

For specific information about any of the preceding products contact your Fairfield sales representative or write to Fairfield headquarters for technical data on Pyrenone & Dri-Die Combinations; Sevin Technical Bulletin; Pyrenone Sprays & Dusts.

Putting Ideas to Work in Chemicals

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441 Lexington Avenue, New York 17, N.Y.

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